

## **APPENDIX A RESPONSE TO AGENCY COMMENTS**

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**Response to Comments on the Draft [Final] Remedial Action Construction Summary Report, Parcel E-2 Phase II, Hunters Point Naval Shipyard, San Francisco, California, June 2020, DCN: APTM-2005-0013-0047**

*Comments by: Nina Bacey, California Department of Toxic Substances Control, comments dated March 5, 2020; follow-up on July 1, 2020.*

Comment	Response
<p><b>1.</b> Section 3.3.2.2, Excavation of Offshore Soil and Sediment from Parcel F – This section refers to as-built Drawing C2 in Appendix C. Drawing C2 is not complete. A portion of the Panhandle Area appears to be missing. Please include the excavated cut to the tidal wetlands area in the drawing. [DTSC] No further comment.</p>	<p>As described in Section 3.3.1 of the Design Basis Report (DBR), the removal of offshore sediment within 6 feet of the shoreline revetment structure was required to ensure its integrity during future remediation activities in Parcel F. As-built Drawing C2 in Appendix C of the RACSR (formerly RACR) correctly depicts the limits of the completed shoreline revetment which does end prior to transitioning into the tidal wetlands. Similarly, the “wedge” of sediment cut from Parcel F (correctly labeled as a 1.0’ cut) ends at the same location. No changes to as-built Drawing C2 are recommended.</p>
<p><b>2.</b> Section 3.2.10 Site Grading to Final Subgrade – Please indicate in this Section how many Low-Level Radiological Objects (LLROs) were identified and removed during the site grading (17?). [DTSC] No further comment.</p>	<p>Section 3.2.10 has been revised to indicate that 18 LLRO’s were identified and removed during the site grading. A new sentence has been inserted into this section to state; “18 LLRO’s were identified and removed during this surface screening process.”</p>
<p><b>3.</b> Section 3.2.13 Construction of Foundation Soil Layer –</p> <ul style="list-style-type: none"> <li>a. Please indicate in this section if the soil that was used for the foundation soil layer was screened for Chemicals of Concern (COCs) in addition to Radionuclides of Concern (ROCs).</li> <li>b. Please indicate in this section if the foundation layer was installed within the freshwater pond and wetland area.</li> <li>c. Clarification is needed for the last paragraph, #1. Is the section of shoreline between the landfill and the geogrid anchor depicted in Drawing C3?</li> <li>d. Is the geogrid anchor the temporary soil anchor as depicted on Drawing C3? Please indicate where the design elevations have not yet been met for the three areas specified.</li> </ul> <p>[DTSC] No further comment.</p>	<p>a. All material generated on site during excavation to the design subgrade was analyzed for ROCs, while additional chemical characterization was only required 1) within the design wetlands area because these areas will not be covered with a protective liner, and 2) within areas designated within the DBR to remove additional hot spots. Appendix AA presents the analytical data and validation reports. All import sources used to complete the foundation soil layer were analyzed for both site COCs and former potential ROCs, the results of which can be found in Appendix W.</p> <p>b. For clarity, the following paragraph will be amended to Section 3.2.13: “To construct the foundation layer within the freshwater and tidal wetlands area, approximately 4,620 cy of clean fill from the “Bernard Pile” in Brisbane CA was imported to the site as the soil bridge layer in accordance with DBR design drawing C19 (ERRG, 2014). Fill within the wetland areas was placed utilizing grade staking marked in the field to exactly 1 foot above the constructed subgrade surface shown on As-built Drawing C5 (Appendix C). The sampling and analysis plan (Work Plan Appendix B; CB&amp;I, 2016) provides analytical requirements and procedures for clean fill import verifications. The approved import material transmittal package was presented to the Navy under Construction Submittal #011 (Appendix P).”</p> <p>c. As-built Drawing C8 depicts the foundation restoration volumes along with a color scheme representation of the areas described in Section</p>

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	<p>3.2.13. A citation will be added to this section as appropriate to bring the reader's attention to the correct figure.</p> <p>d. Correct. The approximate 2-foot thick layer of compacted soil placed directly over the geogrid layer serves as an "anchor" to hold the geogrid layer in place during construction of the shoreline revetment. This area was constructed to the design elevation as specified; however, as described in Section 3.2.13, a small section of shoreline 'between' the landfill and the geogrid anchor point did not meet the foundation design elevation. As noted above, please see as-built Drawing C8 for the representation of this area.</p>
<p>4. Section 3.2.15 Installation of Monitoring and Extraction Wells and Piezometers – Indicates in paragraph six that, <i>"To properly anchor the previously installed geogrid, the Navy required fill material to be placed over the entire upland footprint of geogrid to the finished grade of the final cover. Per the DBR, it is understood that this material is only intended to be temporary and will be removed during Phase III of the RA to allow for installation of the final protective liners."</i> Clarification is needed regarding this temporary material.</p> <p>a. Was it screened for COCs in addition to ROCs and if so, why does it need to be removed prior to installing the final layer of material?</p> <p>b. Please indicate in this section the depth of this material.</p> <p>[DTSC] No further comment.</p>	<p>a. The compacted soil layer placed above the geogrid liner met the same placement criteria as all other compacted foundation material on site. It is referred to as a "temporary layer" because the contractor who installs the final landfill cover system (HDPE geomembrane, drainage Geocomposite, etc.) will need to remove this material to an elevation approximately 6-inches above the in-place geogrid in order to correctly anchor the cover system to the seawall foundation as specified within the DBR.</p> <p>b. The depth of this material varies as the finished grade slopes upward from the completed seawall to the upland anchor point; however, the geogrid was installed at a consistent elevation approximately 6.5 ft above msl. Therefore, it is anticipated the next phase contractor will need to dig out this soil layer down to a depth of approximately 7 ft above msl, leaving a minimum 6" soil layer between the geogrid and the cover materials they will be tasked with installing.</p>
<p>5. Section 3.4.1 Soil and Debris – It's unclear how much soil was not cleared chemically and disposed of as hazardous waste and where that waste was transported to. Though Section 7.1 does reference some material disposal. Please clarify.</p> <p>[DTSC] No further comment.</p>	<p>For clarity, additional language has been added to Section 3.4.1 to better describe the final disposition of soil and debris generated on site. In addition, the following paragraph has been added to the end of Section 3.4.1:</p> <p>"A detailed summary of all material transported off-site for disposal is presented in Appendix X, which in summary includes approximately 2,310 tons of Resource Conservation and Recovery Act hazardous material; approximately 62.43 tons of non-hazardous construction debris; 774 cy of non-hazardous soil; and 98,380 pounds of recycled steel sheet pile."</p>
<p>6. Section 4.7 Radiological Screening of Excavated Soil – Indicates <i>"... 22 of the 42 LLROs were identified and removed during screening of the soil on the RSY pads."</i> Please explain what happened to the other 20 LLROs?</p> <p>[DTSC] No further comment.</p>	<p>Section 4.7 only discusses the radiological screening of excavated soil that took place on RSY pads. Of the 42 total LLROs that were found during the project, 21 of them were found on the RSY pads. The origins of the other 21 LLROs that were identified during the project are described in Section</p>



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<i>Comments by: Nina Bacey, California Department of Toxic Substances Control, comments dated March 5, 2020; follow-up on July 1, 2020.</i>	
	<p>4.4 (18 LLROs during radiological surveys of the SUs), and in Section 3.2.12 (3 LLROs during waste consolidation survey activities). No changes were made to the text in Section 4.7; however, Section 7.1, “Conclusions,” has been revised to provide a summary total of all LLROs identified and recovered during the project.</p>
<p>7. Section 7.0 Conclusions and Ongoing Activities – Indicates that the Parcel E-2 remedial action will consist of three phases. If this has been recently changed to four phases, please indicate that here (first paragraph and in Section 7.2). [DTSC] No further comment.</p>	<p>As described in Section 1.0, the Parcel E-2 remedy is being implemented in phases due to the large scope of required actions as detailed in the Final DBR (ERRG, 2014). Specifically, Section 3, Page 3-2 and 3-3 of the DBR list the RA construction activities to be completed in three separate phases. For clarity, the following statement will be amended to Section 7.0, “Conclusions and Ongoing Activities”:</p> <p>“As mentioned in Section 1.0, the Parcel E-2 remedy is being implemented in <del>three</del> separate phases because of the large scope of required actions as detailed in the DBR (ERRG, 2014). The task order described within this construction summary report was the second phase, which included shoreline revetment; site grading and consolidation of excavated soil, sediment, and debris; and upland slurry wall installation. No further action is required for these RA components; however, <u>the Navy plans to prepare a post-remedial action study work plan to evaluate whether the Phase II remedy is operational and functional. This forthcoming work plan will describe the specific tasks needed to conduct ongoing routine performance monitoring, as necessary, to evaluate the performance of the remedy as installed until the full scope of the DBR (ERRG, 2014) has been implemented. Once the three all phases of the Parcel E-2 RA are completed, and requirements of the ROD (Navy, 2012) will be are met, and the documentation that the RAOs have been achieved will be presented in the final remedial action completion report for the site.</u>”</p>
<p>8. Section 7.1 Conclusions – This last bullet indicates 42 LLROs were identified and recovered during the remediation. The text of the report indicates 17 were removed during the final radiological characterization surface survey and 22 removed during the RSY pad soil screening. Please indicate in the text of the report where the other 3 LLROs were located and how handled. [DTSC] No further comment.</p>	<p>Section 3.2.12 (“On-site Consolidation of Radiologically-Cleared Soil, Sediment, and Debris”), the fourth paragraph, discusses the remaining 3 LLROs that were identified and removed during waste consolidation survey activities.</p> <p>For clarity, Section 7.14, “Conclusions,” has been revised with additional bullets to read as follows:</p> <ul style="list-style-type: none"> <li>• “42 LLROs were identified and recovered during the project <ul style="list-style-type: none"> <li>– 21 LLROs were found on RSY pads</li> <li>– 18 LLROs were found during radiological surveys of the SUs</li> </ul> </li> </ul>

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	– 3 LLROs were found during waste consolidation survey activities”
9. Appendix B Figure C13 – It is difficult to see the hatched area as indicated in the Note. Please revise and/or label to clarify this area of concern. [DTSC] No further comment.	Figure C13 (Appendix B) has been revised to include a legend defining the various hatching patterns used.
10. Appendix C – as-build Drawing C2 – In the legend, the nearshore slurry wall and the site boundary are identified with a similar broken line. DTSC recommends changing one so that it is clear where the slurry is located. [DTSC] No further comment.	Drawing C2 (Appendix C) has been revised to clearly differentiate the two separate line types.
11. Appendix Y – Water Quality Monitoring Data – This appendix appears to be missing the general water quality data and monitoring logs as indicated in Section 3.1.8. Please include. [DTSC] No further comment.	The Water Quality Monitoring Data logs have been added to Appendix Y.
12. Section 3.1.8 of the report text indicates that the field logs for monitoring general water quality during the construction activities are included in Appendix Y. The monitoring logs are not included, only charts of some field parameters and laboratory analytical reports. The field monitoring logs should be included in the appendix.	During shoreline earthmoving work (excavation, backfilling, restoration), water quality monitoring was performed daily for dissolved oxygen, pH, and turbidity; and weekly samples were collected and analyzed for Title 22 metals, polychlorinated biphenyls, pesticides, and radionuclides of concern. The turbidity curtain sample calibration and collection logs were amended to Appendix Y [Water Quality Monitoring Results] as part of the revisions made to the Draft RACR (now RACSR), presented as “NEW_Water Quality Data log.pdf” during the email issuance of Draft Final RACR documents. The turbidity curtain sample collection logs, which will be fully incorporated into Final RACSR Appendix Y, present the daily monitoring results for dissolved oxygen, pH, and turbidity. Furthermore, these logs indicate the dates where the required weekly samples were collected which in turn corollate to the previously mentioned laboratory reporting and monitoring results.
13. The charts provided in Appendix Y and the associated data should be reviewed because it appears that the data lines loop back to older data. The charts should be prepared as scatter plots so that the data are presented in chronological order along the x-axis. It's also recommended that the data be presented with straight lines as the smoothed lines can create this looping effect.	The Appendix Y charts representing Water Quality sample results for Dissolved Oxygen, pH, and Turbidity have been revised to better represent the data in chronological order.

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*Comments by: Marikka Hughes, California Department of Toxic Substances Control, Geological Services Unit, comments dated February 28, 2020; follow-up on June 16, 2020; follow-up on October 23, 2020*

Comment	Response
<p>1. Section 3.2.1 Shoreline Revetment This section states that details of the shoreline revetment construction are described in the “following subsections,” but there are no subsections associated with Section 3.2.1 and the remaining sections in Section 3.2 also refer to the installation of the upland slurry wall and wells and piezometers. It is believed that the statement in Section 3.2.1 is meant to refer to Sections 3.2.2 through 3.2.13. Please review the document and revise as appropriate.</p>	<p>This section has been revised to read as follows: “The shoreline revetment was constructed in accordance with the Work Plan (CB&amp;I, 2016) and as described in Sections 3.2.2 through 3.2.9.”</p>
<p>2. Section 3.2.10.1 Excavation to Construct Future Wetlands The RACR discusses that confirmation samples were collected and exceeded in some of the sample grid locations, but the data are not presented in a table nor is a figure provided where these samples were collected. Please provide a table in the RACR that includes the confirmation sample data and also provide a figure that indicates where the confirmation samples were collected.</p>	<p>The Tidal and Freshwater Wetlands confirmation tabulated data was presented in Appendix X. However, for better clarity, the RACR (now RACSR) has been revised to move the discussion, tables and figures associated with the Tidal Wetland and Freshwater Wetland confirmation sampling forward to the main text. Specifically, several lines of text have been added to Section 3.2.10.1, introducing new Figures 5 through 8 which show the radiological screening and chemical sample locations summarizing the analytical strategy for the freshwater and tidal wetlands, as well as new Tables 5 through 7 which summarize the progression of the chemical confirmation testing results.</p>
<p>3. Section 3.2.12 On-site Consolidation of Radiologically-Cleared Soil, Sediment, and Debris The text indicates that the materials generated at the site for this remedial action exceeded the volume planned in the <i>Final Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California</i> (ERRG, 2014) and a reference to the changes made to the site plan are presented in Appendix C. As the figures provided in the main portion of the RACR include what the pre-existing conditions were at the site, please provide a figure of the site with the different areas post-construction labeled in the main portion of the RACR.</p>	<p>For continuity, a version of the Foundation Grading As-built (Drawing C6 [Appendix C]) will be copied forward to the main portion of the RACSR as Figure 9.</p>
<p>4. Section 3.2.14.5 Excavation and Installation and Section 4.2 Upland Slurry Wall and French Drain Section 3.2.14.5 indicates that an obstruction was noted during the excavation to install the slurry wall, and later in Section 4.2, it is stated that the obstruction is believed to be serpentinite rock. Please provide any photographs of the obstruction available and references to the documents used to determine that this obstruction is likely bedrock.</p>	<p>There are no photographs available of the subsurface obstruction as the cement-bentonite slurry used to maintain the trench excavation in an “open” condition was always required to be kept within two feet of the working surface. Reference to the historical documentation used to deduce a geologic obstruction (Navy, 1958) was provided within the last paragraph of Section 4.2.</p>

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<p>5. Section 3.2.15 Installation of Monitoring and Extraction Wells and Piezometers</p> <p>a. The third paragraph indicates the monitoring wells were installed with a transition seal of bentonite chips, but based on the boring logs included in Appendix F, a bentonite seal was not placed in any of the wells. Please evaluate and revise the RACR as needed. [DTSC] The response indicates that the boring logs in Appendix F were updated to state that a bentonite transition seal was installed. While some of the wells do show a bentonite seal, a number of the wells indicate that the transition seal was #60 sand. It is recommended that the text be revised to indicate that the transition seals used in the well and piezometer construction were either #60 sand or bentonite.</p> <p>b. In the last sentence of the third paragraph, the text states that “the wells were grouted from the top of the bentonite seal to the ground surface.” Please revise this sentence to state that the well annular space was grouted.</p> <p>c. The only figure included with the well locations is provided in Appendix C. It is recommended that a figure showing the locations of the new wells and piezometers is included in the main body of the RACR.</p> <p>d. The RACR indicates that the wells and piezometers were not completed with a surface completion to protect the well, but there is no indication of how the wells are currently completed at the surface and how these locations are being protected while additional work needs to be completed at the site. Please revise the RACR to indicate what condition the wells were left in and what measures have been taken to protect the wells.</p> <p>e. The text does not indicate when the new wells will be developed and samples. Please revise the RACR to state when well development and well sampling will occur. [DTSC] The revision to the Report states that the sampling of the new wells is the responsibility of a future Navy contractor, but as the wells and the remedy have been installed, monitoring of these wells should begin immediately so as to understand how groundwater conditions change after the excavations and</p>	<p>a. The Draft boring logs for the monitoring wells initially included in Appendix F have been updated to accurately reflect a transition seal of bentonite chips. For clarity, the statement in question (Section 3.2.15) has been revised to read: “For the three monitoring wells, two feet of bentonite chips were placed on top of the sand pack and were hydrated before placement of the grout; the piezometers and leachate extractions wells used a transition seal of #60 sand.”</p> <p>b. The sentence was revised as follows: “...the annular space of the wells was grouted from the top of the bentonite seal to the ground surface.”</p> <p>c. For continuity, a version of the Foundation Grading As-built (Drawing C6 [Appendix C]) will be copied forward to the main portion of the RACSR as Figure 9. This new figure will be used to present the new upgradient well network.</p> <p>d. For clarity, the following statement has been added to Section 3.2.15, “As well completions are to be finalized by the Navy’s follow-on contractor, the wells were generally left with 2 plus feet of casing sticking up above ground surface and a compression cap covering the opening. A cone or similar demarcation item was additionally left at each well location to increase visibility so as to avoid contact with any potential vehicle traffic at the site.”</p> <p>e. For clarity, the following statement has been added to Section 3.2.15, “In accordance with the technical specifications of the DBR (ERRG, 2014), each of the three new monitoring wells were developed within 72 hours of their installation. (Appendix X includes data for the development water characterization.) Well sampling of the completed upgradient well network will be the responsibility of a future Navy contractor.”</p> <p>The Remedial Action Monitoring Plan (RAMP) for Parcel E-2 (ERRG, 2014) details the approach for monitoring groundwater at Parcel E-2, including the constructed wetlands and the newly installed monitoring well network adjacent to the nearshore slurry wall. Although the new wells were inaccessible due to ongoing construction, there were two adjacent sampling events which took place in 2019 within Parcel E-2 as</p>
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<p>installation of the slurry wall. The Navy should secure a contractor to begin monitoring at these wells immediately.</p> <p>[October 23, 2020 response] The RTC indicates that sampling events occurred at adjacent areas as part of the 2019 groundwater monitoring program and refers to the 2014 Remedial Action Monitoring Plan (RAMP). However, the remedy was not installed as planned and therefore, the monitoring plan associated with it should be altered to adequately monitor the groundwater on the bayside of the nearshore slurry wall. It is recommended that the RAMP be revised now that the remedies have been installed.</p>	<p>part of the Navy's basewide groundwater monitoring program. For additional information, the reviewer is referred to the Navy's 2019 Annual Groundwater Monitoring Report (Trevet, 2020). In addition, Section 7.2, Recommendations and Outgoing Activities has been revised to include the following new bullet stating:</p> <p>"Collect depth-to-water measurements from the nearshore slurry wall piezometers during the next scheduled sampling event in order to verify that the hydraulic gradient across, and the mound height upgradient of, the nearshore slurry wall do not exceed the acceptable limits identified in the DBR"</p> <p>The Navy will evaluate the Parcel E-2 RAMP (ERRG, 2014) and make revisions as necessary to ensure appropriate measures are put in place to adequately monitor the as-built effectiveness of both the upland and nearshore slurry wall systems. In addition, the Navy shall prepare a Post-Remedial Action Study Work Plan to address the tri-agency concerns and to evaluate whether the Phase II remedy is operational and functional. This work plan will provide ongoing routine performance monitoring data, as necessary, to demonstrate that each individual Phase of the Parcel E-2 remedy is operational and functional until the full scope of the DBR has been implemented and development of a Final RACR is complete.</p> <p>In addition, Section 7.2, Recommendations and Outgoing Activities has been further revised to include the following two new bullets:</p> <p>"Preparation of a post-remedial action study work plan intended to describe the specific tasks needed to conduct ongoing routine performance monitoring to evaluate the performance of the remedy as installed until the full scope of the DBR has been implemented", and</p> <p>"Development of a final Remedial Action Completion Report, demonstrating that the remedy is complete and meets the RAOs of the ROD"</p>
<p>6. Section 3.4.1 Soil and Debris</p> <p>This section discusses the wastes that were generated, but does not provide details on how much material was disposed of off-site or placed in the waste consolidation area at the site. Please revise the RACR to include details on</p>	<p>For clarity, additional language has been added to Section 3.4.1 to better describe the final disposition of soil and debris generated on site. In addition, the following paragraph has been added to the end of Section 3.4.1:</p>

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<p>where the wastes went and what volumes were disposed of off-site and on-site in one section of the text.</p>	<p>“A detailed summary of all material transported off-site for disposal is presented in Appendix X, which in summary includes approximately 2,310 tons of Resource Conservation and Recovery Act hazardous material; approximately 62.43 tons of non-hazardous construction debris; 774 cy of non-hazardous soil; and 98,380 pounds of recycled steel sheet pile.”</p>
<p>7. Section 3.9 Decontamination and Release of Equipment and Tools This section does not provide a discussion of how the drilling rig and downhole equipment were decontaminated. Please revise to state what decontamination measures occurred during the installation of the wells and piezometers. [DTSC] Additional text was added to Section 3.2.15 that states that augers and drilling equipment were dry-brushed between drilling locations to remove visible soils before moving to the next location. This is inadequate decontamination between well locations as not all potential contaminants are removed simply by brushing the drilling equipment and augers. Drilling wells involves advancing into groundwater, the lack of an adequate decontamination could cause cross-contamination. Additionally, after advancing into groundwater, the augers and downhole equipment would have encountered wet soils, which cannot be dry-brushed unless the soils on the equipment were permitted to completely dry beforehand. In the future, it is recommended that decontamination of downhole equipment involve a steam cleaning or triple rinse with a non-phosphate detergent.</p>	<p>Additional text has been added to Section 3.2.15 Installation of Monitoring and Extraction Wells and Piezometers. Upon further review, it has been determined that the original response to comment 7 (dry decon) was incomplete as it was prepared in direct response to Radiological clearance only. After discussion with the geologist in charge of overseeing the subject well installation, as evidenced by the attached photographic documentation [Appendix A], it has been confirmed that all augers and drilling equipment were indeed steam cleaned prior to advancing to the next location. For clarity, the text of Section 3.2.15 has been amended to read as follow: <b><u>“In between each auger-drill or direct-push, auger and bore equipment surfaces were radiologically surveyed to verify the absence of embedded LLRO’s and surface contaminations. To assist in this process, the equipment was dry brushed to remove visible soils as necessary. After verifying the absence of radiological contamination, the equipment was then decontaminated with a steam cleaner prior to advancing to the next location.</u></b> Borehole logging was conducted by a geologist under supervision of a State of California Professional Geologist. Soil was classified using the Unified Soil Classification System (ASTM D2488), and was evaluated for grain size, soil type, and moisture content. <b><u>The removed, over-burden soil was transported to the RSY pads for radiological screening as described in Section 3.3.”</u></b></p>
<p>8. Appendix F Monitoring Well Network (Logs and Data) a. It is recommended that a table providing the well construction data for the wells and piezometers installed be provided in the RACR. b. The well construction diagrams on all boring logs except for EX WELL-001 do not provide details regarding the two uppermost materials placed in the annular space. Please revise the diagrams to identify what materials were used in the construction of these wells and piezometers.</p>	<p>a. A summary table providing the well construction data for the wells and piezometers installed has been amended to the start of Appendix F. b. The draft boring logs have been updated to accurately provide well construction materials for all wells and piezometers included within Appendix F. c. The subject boring log has been updated to accurately reflect well construction materials.</p>

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<p>c. On the boring log for EX WELL-001, there is a backfill material indicated beneath the well construction materials. Please revise the log to indicate what this material is.</p>	
<p>9. Figure 6 Freshwater Wetland Final Chemical Confirmation Sample Grids</p> <p>a) An explanation of what the red font in the sample results should be added to the legend.</p> <p>b) In the sample result boxes, some of the results are labeled with “N,” “E,” “S,” and “W.” While these appear to represent which sidewalls were sampled, these labels should be defined in the legend.</p> <p>c) A hot spot goal is provided only for lead on this figure, when other constituent results are presented on this figure. The hot spot goals for copper, total petroleum hydrocarbons (TPH), and polychlorinated biphenyls (PCBs) should be included as notes on this figure.</p>	<p>For clarity, the following notes have been added to Figure 6.</p> <p>a) Sample results shown in <b>red</b> indicate samples exceeding the project action limit.</p> <p>b) A list of abbreviations has also been added to Figure 6 to include: F – Freshwater Wetlands Confirmation Sample EB – Excavation Bottom Confirmation Sample SW – Excavation Sidewall Confirmation Sample N – North E – East S – South W – West Mg/kg – milligram per kilogram Pb – Lead PCB – Polychlorinated Biphenyl TPH – Total Petroleum Hydrocarbons Cu – Copper</p> <p>c) Hot spot goals for Cu, TPH, and PCBs have been added as recommended.</p>
<p>10. Figure 7 Tidal Wetland Final Chemical Confirmation Sample Grids</p> <p>a) An explanation of what the red font in the sample results should be added to the legend.</p> <p>b) A hot spot goal is provided only for lead on this figure, when copper results are also presented on this figure. The hot spot goal for copper should be included as notes on this figure.</p> <p>c) Only two sample locations are indicated on this figure, when a sample should have been collected from each sample grid. This figure should be revised to include all sample locations.</p>	<p>For clarity, the following notes have been added to Figure 7.</p> <p>a) Sample results shown in <b>red</b> indicate samples exceeding the project action limit.</p> <p>b) Consistent with the changes made to Figure 6, hot spot goals for Cu, TPH, and PCBs have been added to the Legend.</p> <p>c) The CAD layer showing the additional sample locations was inadvertently turned off. Consistent with other figures, Figure 7 now correctly shows the “x” symbol identifying the location where all confirmation samples were collected; however, posting boxes will only be shown for those locations where the initial sample exceeded the project action level. A full summary of the data collected, including all sample results (pass or fail), are included in Tables 6 and 7.</p> <p>d) Consistent with the changes made to Figure 6; a list of abbreviations has also been added to Figure 7 to include:</p>

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<i>Comments by: Marikka Hughes, California Department of Toxic Substances Control, Geological Services Unit, comments dated February 28, 2020; follow-up on June 16, 2020; follow-up on October 23, 2020</i>	
	T – Tidal Wetlands Confirmation Sample EB – Excavation Bottom Confirmation Sample SW – Excavation Sidewall Confirmation Sample N – North E – East S – South W – West Mg/kg – milligram per kilogram Pb – Lead PCB – Polychlorinated Biphenyl TPH – Total Petroleum Hydrocarbons Cu – Copper



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*Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office, comments dated March 4, 2020; follow-up on June 29, 2020; follow-up on October 22, 2020*

Comment	Response
<p>1. Section 3.2.9 Perimeter Channel Outlet. The fifth sentence states that bedding material consisting of sand with a maximum particle size of two inches was used during final grade restoration where the outfall pipe passed through the nearshore slurry wall cap. However, we note that the described two-inch material would classify as gravel and that the maximum sand particle size per the Unified Soil Classification System (USCS) is 4.75 millimeter. The text should be revised to include the correct description of the bedding material used and the relevant construction specification should be cited. [DTSC] No further comment.</p>	<p>For clarity, the noted statement has been revised to read as follows: “Where the outfall pipe passed through the nearshore slurry wall cap, bedding material consisting of silty, clayey sand with gravel (Bernard Pile [Appendix M]) was used during restoration of final grade.”</p>
<p>2. Section 3.2.14.5 Excavation and Installation The first sentence in the seventh paragraph states that approximately 760 cubic yards (cy) of soil and debris was excavated during the upland slurry wall construction. It is not clear if these are bank or excavated cubic yards, and if the slurry wall cap excavation materials are included. Based on the described slurry wall configuration, our calculations indicate a total bank cubic yardage of more than 100 cy above the reported number. The volume of excavated soil and debris should be reviewed and revised, if necessary, to conform to the slurry wall configuration. [DTSC] No further comment.</p>	<p>The excavated volume of material removed during construction of the upland slurry wall has been confirmed as approximately 760 [bank] cubic yards. This volume does not include material used to construct the final trench cover which, as described in the paragraph above, took place after the entire alignment of the trench and temporary cover was installed.</p>
<p>3. Section 4.2 Upland Slurry Wall and French Drain The second sentence in the third paragraph states that information collected during installation of the slurry wall together with a historical record search indicates that the obstruction encountered at a depth of about ten feet along an approximate 200-foot section of the slurry wall alignment is geologic rather than man-made. The sentence further states that Aptim recommends leaving the slurry wall as constructed without further alterations to the target depth. However, we note that the text does not discuss the field data and nature of any samples obtained to support the geologic nature of the obstruction or how the requirement to key in the slurry wall into the underlying bay mud was met. The text should be revised to include a discussion of the field sampling data/information and the effect of terminating the slurry wall on top of/within the obstruction and whether/how this termination meets the approved design.</p>	<p>As described in the final paragraph of Section 3.2.14, the upland slurry wall is considered a “hanging” slurry wall because it was not intended to key into an aquitard. A two-foot key into the underlying bay mud layer was only a requirement for the nearshore slurry wall which was installed by a previous contractor in 2016. As discussed within the final DBR, some groundwater will flow under the upland slurry wall, but groundwater modeling predictions (DBR Appendix F; ERRG. 2014) indicate that upgradient flow will mostly be diverted around the upland slurry wall or diverted to the freshwater wetland via the French drain (Section 3.2.14.7) installed on the upgradient side of the upland slurry wall. As described under Section 4.2, paragraph 2, of the Final RACSR (formerly RACR), a Direct Push rig was used in an attempt to map a path around the perceived obstruction. Unlike rotary drilling, drill cuttings were not removed from the hole, nor were geotechnical samples collected.</p>

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*Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office, comments dated March 4, 2020; follow-up on June 29, 2020; follow-up on October 22, 2020*

[DTSC] No further comment on keying of the slurry wall into bay mud. However, no description of the obstruction material is included in the text. The second paragraph states that 12 step-out locations were investigated using a direct push drill rig to assess the obstruction in accordance with a recommendation from the Navy. The text states that difficult drilling conditions were encountered with six locations meeting complete refusal and six locations advancing to the design depth with difficulty. The text does not include any information on the material(s) encountered at any of the 12 locations. The text should be expanded to include a summary of the materials encountered at each of the 12 locations, or at the very least, the materials encountered at the six locations that were advanced to the design depth.

[October 23, 2020 Response] The RTC states that a Direct Push rig was used in an attempt to map a path around the perceived obstruction, but unlike rotary drilling, no drill cuttings were removed from the hole, nor were geotechnical samples collected. It appears that the method used was unsuitable for producing any useful information to determine the nature of the obstruction or whether the slurry wall was terminated properly over a distance of more than 200-feet, along the section located over the obstruction. We note that upland slurry wall specifications in the August 2014 Final Design Basis Report, Parcel E-2, Appendix C Project Specifications, Section 02 32 00 Subsurface Drilling, Sampling, and Testing 05/10, Part 1.6.2 Field Measurements states "For the upland slurry wall, it is the sole responsibility of the contractor to select the necessary boring spacing and frequency required to properly demonstrate that the bottom of the slurry wall is installed within the most impermeable material along the wall's alignment". In the absence of any information on the nature of the obstruction material (intact rock, weathered rock, gravel, cobble, etc.) or total depth of the obstruction it is not possible to determine if the above specification was met.

For clarity, the second paragraph of Section 4.2 has been revised to read as follows:

"Following the recommendation of the Navy's design engineer, a direct push drill rig was mobilized to the site on September 18, 2018. A total of 12 step out locations were investigated using a 3.5 inch diameter drive casing in an attempt to confirm the presence/absence of ~~the a~~ buried obstruction in relation to the proposed upland slurry wall alignment (As built Drawing C7; Appendix C). Essentially no drill cuttings were generated by the direct-push rig, nor were geotechnical samples collected. The 12 selected locations encountered difficult ~~drilling driving~~ conditions at or very near the same subsurface elevation, with 6 locations meeting complete refusal of the drill rig. These 6 locations were able to reach the design depth only after significant effort ~~in drilling~~ with no discernable limit of subsurface obstruction."

Please see response to Water Board comment #15. The rationale for the conclusion that this obstruction is bedrock is based on the historical boring logs as provided herein for review. The Navy will evaluate the Parcel E-2 RAMP (ERRG, 2014) and make revisions as necessary to ensure appropriate measures are put in place to adequately monitor the as-built effectiveness of both the upland and nearshore slurry wall systems.

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<p>We recommend data are collected to properly demonstrate how the upland slurry walls specifications were met, or alternatively, other post construction monitoring of the upland slurry wall along the obstruction alignment should be performed to verify effectiveness of the slurry wall.</p>	
<p>4. Table 3 Waste-Consolidation Comparison Criteria The comparison criteria value for lead is shown as 19,700 milligrams per kilogram. However, this value is ten times that shown in Table 1 Hot Spot Goals for Soil and Sediment. This value should be reviewed for accuracy and revised accordingly. [DTSC] No further comment.</p>	<p>Table 3 of the Draft (Phase II) RACR does indeed contain a typo in that the Hot Spot Goal for lead should read 1,970 (mg/kg). This table will be reviewed and revised for accuracy during the Final RACSR (formerly RACR) submittal. Please note that while this table does contain a typo, the correct value of 1,970 mg/kg was used during the lead soil investigation summarized in Appendix X.</p>
<p>5. Appendix C Construction As-Built Drawings. Drawing C2 Shoreline Revetment Finish Grading As-Build The nearshore slurry wall shown on the drawing is on the order of 1200 feet long. However the nearshore slurry wall described in the report text is indicated to be on the order of 571 feet. In addition, the drawing does not show all the existing features, specifically Drawing C1 Pre-Existing Site Conditions shows at least three pre-existing monitoring wells that are proximal to the alignment of the nearshore slurry wall and which are not shown in Drawing C2. In addition, Drawing C2 shows 13 extraction wells which are not shown in Drawing C1, and are not discussed in the report. The drawings and report should be reviewed for consistency and revised accordingly. [DTSC] Drawing C2 shows the near-shore slurry wall installed as part of Parcel E-2 Phase I construction. The drawing also shows monitoring wells installed as part of Phase II construction, the subject of the current RACR. The drawing does not show the location of the upland slurry wall installed as part of the Phase II construction. The Drawing C2 title block is also labeled "Parcel E-2 As-Built". The RTC refers to Section 3.2.14 Upland Slurry Wall Installation for a description of the location of the upland slurry wall. However, we note that the upland slurry wall does not appear to be depicted on any as-built drawings. The Phase II remedial action completion report as-built drawings should clearly show the features installed as part of the Phase II remedial action so that they are distinguishable from pre-existing features.</p>	<p>As stated in the first paragraph of Section 3.2.14: The ROD (Navy, 2012) specifies that groundwater at Parcel E-2 will be controlled through the installation of two below-ground barriers; the nearshore slurry wall (installed by the Phase I contractor in 2016) and the upland slurry wall constructed under this RA. Therefore, all references to slurry wall installation within this RACSR should be in reference to the 'upland' wall, which extends approximately 571 feet from the northern parcel boundary to the southern extent of the landfill waste in the western portion of Parcel E-2. The as-built location of the nearshore slurry wall (Phase I, 2016) is shown on Drawing C1, Pre-Existing Conditions, as well as the location of the monitoring well network as it existed prior to initiation of the Phase II RA. Drawing C2 shows the as-built installation of the nearshore slurry wall and newly installed upgradient well network (Section 3.2.15) which included the installation of 4 piezometers, 3 monitoring wells, and 13 leachate monitoring/extraction wells. As-built Drawing C2 [Shoreline Revetment Finish Grade As-Built] was only intended to show the as-built conditions at the shoreline. As described throughout Section 3.2.14 of the Final RACSR, the as-built conditions of the upland slurry wall are presented on As-Built Drawing C7. The surveyed location of the upland slurry wall is also shown at a larger scale on As-Built Drawing C6 [Foundation Grading As-Built], which is considered the final Phase 2 site condition.</p>

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*Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office, comments dated March 4, 2020; follow-up on June 29, 2020; follow-up on October 22, 2020*

<p>[October 23, 2020 Response] The RTC states that the as-built conditions of the upland slurry wall are presented on Drawing C7. We note that the contours on Drawing C7, Upland Slurry Wall and French Drain As-Built, are not labeled. The RTC also states that the final surveyed location of the slurry wall is shown on As-Built Drawing C6 (Foundation Grading As-Built), at a larger scale, and is considered the final Phase 2 site condition. We note that Drawing C6 was not provided for review.</p>	<p>As-built Drawing C7 has been updated to include contour labels as appropriate.</p>
<p>6. Appendix C Construction As-Built Drawings. Drawing C6 Foundation Grading As-Built The contours shown on this drawing differ from those shown on Drawing C2 Shoreline Revetment Finish Grading As-Built. The text report states that Phase II remedial action completion left finished grades as foundation layer grades. The drawings should be reviewed and revised to remove the discrepancies. [DTSC] The drawing was not included in the most recent submittal. However, the contours on Drawing C2 appear to have been updated to match Drawing C6, as stated in the RTC. We have no further comment.</p>	<p>As-built Drawing C2 was only intended to show the as-built conditions at the shoreline, while as-built Drawing C6 represents the final as-built conditions of the foundation grade. However, to help avoid confusion, the contours shown on as-built Drawing C2 have been updated to the final foundation grade as suggested within the figure title.</p>
<p>7. Appendix C Construction As-Built Drawings. Drawing C7 Upland Slurry Wall and French Drain As-Built. The Profile View Alignment – (Upland Slurry Wall) shows a bottom slurry wall elevation of about – 10.00 feet with an approximate 200-foot section with a bottom elevation of elevation 0.00 feet. Note 1 associated with the profile states that the Bay mud for the section is noncontiguous and not considered an aquitard. However, we note that the third sentence in the second paragraph in Section 3.7.2.2 Wall Depths of the August 2014 Final Design Basis Report, Parcel E-2 states that the bottom elevation of the nearshore slurry wall varies between -6 and -20 feet below msl based on the location of the underlying Bay Mud aquitard, stated in the first sentence of the same paragraph. The as-built condition appears to be a deviation from the Design Basis Report (DBR), and it is not clear if the Bay Mud aquitard was engaged. The as-built condition should be evaluated against the DBR and the implications of not engaging the underlying Bay Mud should be evaluated, in relation to the effectiveness of the nearshore slurry wall, and the conclusion(s) in the third paragraph in Section 7.1 Conclusions should be revised as necessary. [DTSC] Drawing C7 was not provided for review. The RTC states that as-built drawing C7 is a true and correct representation of the upland</p>	<p>As-built Drawing C7 is a true and correct representation of the upland slurry wall which is described in the final paragraph in Section 3.7.2.2 of the DBR (ERRG, 2014). As described in the DBR, “The upland slurry wall will be installed from the designed finish grade, down through a thin noncontiguous lens of Bay Mud (identified in the boring logs as clay with shell fragments), to an elevation of approximately -10 feet below msl.” The details described in paragraph two of Section 3.7.2.2 of the DBR are in reference to the nearshore slurry wall which, as previously discussed, was installed by the Phase I contractor in 2016. As cited within the legend of Drawing C7, the approximate depth to bay mud presented for this section was as defined in the final DBR (ERRG, 2014). Furthermore, the notes on Drawing C7 state that the bay mud layer for this section is noncontiguous and not considered an aquitard. Since the upland slurry wall was designed as a hanging wall, i.e., it was not intended to key into an aquitard, a subsurface investigation for the purpose of mapping the top of bay mud in this area was not conducted as part of the Phase II RA.  See also response to DTSC comment 3.</p>

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*Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office, comments dated March 4, 2020; follow-up on June 29, 2020; follow-up on October 22, 2020*

<p>slurry wall. However, we note that the profile section shows the bay mud as extending across the obstruction encountered on an approximate 200-foot section of the slurry wall. This depiction appears to be incorrect as the direct-push drilling completed to evaluate the obstruction reported either complete refusal or difficult drilling which does not appear to support the presence of bay mud within the obstruction. We recommend the profile section is revised to show the correct as-built location of the bay mud layer and the notes are expanded to include an explanation of the obstruction encountered during installation, and hence the deviation from the approved design. [October 2020 Response] The RTC indicates that the notes on Drawing C7 state that the bay mud layer for this section is noncontiguous and not considered an aquitard. The RTC further states that the upland slurry wall was designed as a hanging wall and a subsurface investigation for the purpose of mapping the top of bay mud in this area was not conducted as part of the Phase II RA.</p> <p>We note that the profile view of the upland slurry wall alignment still shows a bay mud layer within the obstruction although the direct push drilling is indicated to have encountered complete refusal within the obstruction. The drawing appears to indicate that the as-built condition consists of bay mud within the obstruction however, there is no data to support the depicted as-built condition. We suggest the bay mud depicted within the obstruction is deleted unless subsurface information showing the presence of bay mud is available.</p>	<p>As-built drawing C7 has been revised to remove the unconfirmed presence of a bay mud layer below the upland slurry wall</p>
<p>8. Appendix M Quality Control Testing Results The Daily-Compaction Test Report by Smith-Emery San Francisco dated 7/5/18 presents 13 field compaction test results all marked as passing. However, the specified relative compaction is shown as 95% and all the test results are between 91 and 93 percent of the maximum dry density which indicates that all the test results failed to meet the compaction specification. All the reported test results should have been indicated as failing and the appropriate box below the results table should have indicated that the material tested did not meet requirements of the jurisdiction approved documents. The compaction test report should be revised to address and resolve the discrepancy and a discussion on the implications of the failed</p>	<p>As specified in the final DBR for Parcel E-2 (ERRG, 2014); "Soil cover material at depths greater than 0.5 foot below the final cover surface will be compacted to 90 percent or greater of the maximum dry density at or near optimum moisture, in accordance with ASTM International (ASTM)-modified proctor density testing." References in the Daily-Compaction Test Report by Smith-Emery citing a compaction specification of 95% are in error and the reported test results ranging between 91 and 93 percent of the maximum dry density were correctly reported as passing test results. The compaction test reports in Appendix M will be reviewed and revised, as necessary, to resolve this discrepancy.</p>

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<p>compaction tests on the performance of the associated work should be included in the report. [DTSC] The relevant revised pages from Appendix M were provided via email. The compaction requirement was revised from 95 to 90%. No further comment.</p>	
<p>9. Appendix O Weekly Control Meeting Minutes. Project QC Meeting Notes from QC Meeting 45 (08.29.2017) The bolded text at the bottom of Item 5 states that compaction was not performed during backfilling because the backfilling work was shoreline work and there were no compaction requirements. However, our review of As-Built Drawing C5 Subgrade Excavation Volumes shows that 204 cubic yards of fill was placed in conjunction with the revetment and As-Built Drawing C3 Shoreline Revetment Detail shows “Compacted foundation” below the geogrid. The meeting note indicates that the DBR requirement was not followed and additionally that the “Compacted foundation” text in As-Built Drawing C3 is in error. The As-Built drawing should be revised accordingly and the implications of the presence of an uncompacted foundation layer, at least locally, on the long-term performance of the revetment should be evaluated. [DTSC] Appendix O was not provided for review. The RTC notes that the shoreline revetment construction did not begin until April 2018. The RTC states that the Project QC Meeting Notes from the 8/29/2017 meeting discuss backfilling in the tidal wetlands and panhandle area. The RTC further states that backfilling along the shoreline should be in reference to the Tidal Wetlands. The RTC did not indicate if the meeting notes were revised in the final version. The RACR was prepared for Parcel E-2 Phase II construction and material discussing features outside of the RACR scope should be clearly identified for clarity and completeness of the RACR/administrative record. We recommend notations/footnotes are included to identify material outside of the RACR scope.</p>	<p>Please note that construction of the shoreline revetment did not begin until April 2018 (QC Meeting 76, 04/10/2018). Project QC Meeting Notes from QC Meeting 45 (8/29/2017) discuss backfilling in the tidal wetlands and panhandle area. Thus, backfilling along the shoreline in this context should be in reference to the Tidal Wetlands. As-Built Drawing C5 Subgrade Excavation Volumes correctly shows a fill of 0 cubic yards placed within the Tidal Wetland during construction of the Subgrade surface.</p> <p>No revisions to the Project QC Meeting Notes from 8/29/2017 have been made. As presented within the notes from QC meeting #45, work for the week from 08/21/2017-08/28/2017 included Backfilling in the tidal wetlands area and the panhandle areas. The comment in question, which was the result of a question posed by the Navy ROICC Shirley Ng, would have been representative of work to be accomplished on the date of her inspection on August 29, 2017. The response provided by APTIM’s PQCM Chris Hanif during the meeting in 2017, was correct provided he was referring to the tidal wetland area, specifically those areas below the tide line.</p> <p>For consistency with the regulatory comment, As-Built Drawing C3 the Shoreline Revetment detail, has been re-labeled as “native foundation” where appropriate to indicate a cut to reach the design elevation rather than newly placed compacted fill as previously inferred. (Note, along the shoreline, this layer was most typically Bay Mud.) The analysis of the slope stability of the landfill final cover under static and seismic conditions was completed using data collected from the native materials on site combined with the added weight of the newly imported materials per the final design. The work completed is therefore believed to be in full agreement with the Geotechnical Analysis Report completed for the site (Appendix E of the DBR).</p>

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*Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office, comments dated March 4, 2020; follow-up on June 29, 2020; follow-up on October 22, 2020*

<p>[October 23, 2020 Response] The RTC states that no revisions to the Project QC Meeting Notes from 8/29/2017 were made. The RTC further states that, “the response provided by APTIM’s PQCM Chris Hanif during the meeting in 2017, <u>was correct provided</u> he was referring to tidal wetland area, specifically those areas below the tideline” (bolded text for emphasis). APTIM’s PQCM response should be verified to remove the conditionality in the RTC.</p>	<p>Section 7.2 of the Final RACSR was previously revised to include all recommendations and future activities to be completed as part of the Phase III RA. See also response to DTSC comment 10.</p> <p>APTIM’s PQCM Chris Hanif has since transitioned his role to another company. However, even if he could be reached, he would not be expected to conclusively recall the exact details of a comment made over three years ago. The Navy stands by its response that the provided meeting minutes are an accurate record of the discussions which took place on the date of record. As documented within the Final RACSR, compaction testing was completed for the foundation soil layer, i.e., the areas below the final soil cover and protective liner for the Parcel E-2 landfill and adjacent non-wetland areas [DBR, Section 3.5.2]. Compaction/compaction testing of soils within the inter-tidal zone, i.e., where soils are saturated and below the water level during high tide events would be impractical and the results unusable.</p>
<p>10. Appendix O Weekly Control Meeting Minutes. Project QC Meeting Notes from QC Meeting 49 (09.26.2017) The bolded text at the end of Item 5 refers to brick as Naturally Occurring Radioactive Material (NORM) and states that the tentative plan was to leave the bricks in place. The Comments/Questions section after Item 11 in the Project QC Meeting Notes from QC Meeting 53 (10/24/2017) indicates that fire brick was left in place in the North Perimeter. The Comments/Questions section after Item 11 in the Project QC Meeting Notes from QC Meeting #81 (5.15.2018) states that fire brick was NORM and was thereby not subject to Navy cleanup. Although we recognize that manufactured brick may contain NORM, the basis for exempting the manufactured brick materials from removal and disposal at this site is not clear. We also note that the handling and final disposition of the bricks is not discussed in the RACR text. The RACR text should be revised to include the data that identifies and documents the brick materials as NORM, a description of the basis for not removing them during the remedial action, and a discussion of how the bricks were handled and their final disposition. [DTSC] Appendix O was not provided for review. The RTC states that Section 3.4.2 was revised to include how the bricks were handled and</p>	<p>The data which identifies and documents the brick material as NORM was provided in the RACSR (formerly RACR) Appendix W Survey Unit Characterization Reports. As an example, see North Perimeter SU 01, 02, 03, 04, 05 and 09 Hunters Point Naval Shipyard, Parcel E-2 Radiological Characterization of Subgrade Data Report. A discussion of how the bricks were handled and their final disposition has been added to Section 3.4.2, Low-Level Radioactive Waste, which was revised to read as follows: “Materials that exceeded the radiological release criteria in Table 2 were handled as LLRW. Materials that were determined to be NORM, such as fire-brick, were removed during the ex-situ soil screening process and also dispositioned as LLRW. Approximately 85 cy of soil and other materials were placed in bins as LLRW. The bins were transferred to the Navy LLRW contractor for disposal. Appendix E includes LLRW waste manifests.” Appendix O includes the weekly Quality Control Meeting Minutes for the project. These meeting minutes include a summary of the week’s activities for Navy review, as well as discussions/opinions related to ongoing and planned future work. While it is understood that certain planned activities</p>

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*Comments by: Jesse Negherbon, California Department of Toxic Substances Control, Engineering and Special Project Office, comments dated March 4, 2020; follow-up on June 29, 2020; follow-up on October 22, 2020*

their final disposition. We find that revised text in Section 3.4.2 addresses the handling and final disposition of the bricks adequately. We recommend notations/footnotes are included in Appendix O for clarity and completeness.

and discussion may change, especially as new information is obtained, these meeting minutes are believed to be an accurate record of the referenced meeting as it occurred. It is the purpose of the Final RACSR to document the “as-built” condition of the site and all Remedial Activities as they occurred. No additional changes are recommended to the Project QC Meeting Notes in Appendix O.



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<i>Comments by: Tami LaBonty, California Department of Fish and Wildlife, Office of Spill Prevention and Response, comments dated March 6, 2020; follow-up on June 16, 2020</i>	
<b>Comment</b>	<b>Response</b>
1. Appendix T. Please label all photographs with the date, a brief description of the photo, and the direction the photo was taken where appropriate. Comment # 1. The response to Comment # 1 is noted.	Appendix T includes results of the biological surveys and daily biological inspections as prepared by NOREAS Inc. to support the remedial action performed by APTIM. The daily biological monitoring form attached with each set of photos provide a date and a brief summary of activities for the day. No additional changes to the photographs are recommended at this time.
2. Page T-41. The version of Appendix T that we received starts on page T-41. Are pages T-1 to T-40 supposed to be included in Appendix T? Comment # 2. The response to Comment # 2 is accepted.	Appendix T, 2,547 pages in total, should begin with page T-1 and end with page T-2,547. Future submittals of this Appendix will be verified for completeness prior to re-submittal.
3. Pages T-114 to T-130. The Daily Biological Monitoring Forms dated 1/1/17 and 1/18/17 are out of sequence in the appendix. These forms are included between the forms dated 1/26/17 and 4/03/17. Please rearrange the forms and associated photographs into chronological order. Comment # 3. The response to Comment # 3 is accepted.	The daily biological monitoring forms in Appendix T have been reviewed and rearranged into chronological order as appropriate.
4. Page T-585 and T-696. The Daily Biological Monitoring Forms indicate nesting American Avocets have been observed at two distinct active nest sites and a 50 foot activity exclusion buffer was being maintained around both nests (first indicated on the form dated 5/31/17 for the first nest site, and on 6/12/17 for the second nest site). Please include photographs of these two nests sites with the corresponding monitoring forms, if available.	APTIM has received a Memo dated 4/24/2020 from NOREAS, their biological subcontractor, that includes photographs of the two nest sites. The Memo is provided as an attachment to this RTC file (Appendix A).
5. Page T-1972. From page T-1972 forward, please check the dates on the Daily Biological Monitoring Forms to ensure they are correct and revise as needed. Some of the forms are dated with the year 2016 instead of 2017. Some of the forms have the same day of the month (e.g., page T-1979 11/2/17 and page 1994 11/2/16).	Appendix T has been reviewed and revised to address any inconsistencies.
6. Page 1-1, Section 1.0, Overview, First Paragraph. Please remove the period before colon in last sentence.	The text has been revised as noted.

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<i>Comments by: Karen Ueno, US Environmental Protection Agency, comments dated March 6, 2020; follow-up on August 6, 2020</i>	
<b>Comment</b>	<b>Response</b>
1. U.S. EPA supports DTSC's comments on the draft RACR that were submitted to the Navy on 03/05/2020 and which are attached for convenience. EPA attempted not to repeat DTSC's comments except for particularly important concerns.	Comment noted.
2. Section 3.2.10.1 indicates that there are more than the apparent 6 FWV/FCR identified in Section 3.12. Correct this discrepancy and include clear descriptions in the RACR of all work variances and change requests and their approval status.	Section 3.2.10.1 introduces the acronym Field Work Variance (FWV), of which there are two: FWV-04 and FWV-05. Section 3.2.10.1 also introduces the acronym for Survey Unit freshwater (FW). The two acronyms, while similar, are not interchangeable.
3. Section 4 includes many FWV/FCRs, but no clear indication of approval status. The RACR needs to clearly identify all FWV/FCR and their approval status. See comment, above.	As summarized in Section 3.12, Deviations from Planning Documents: A total of six FCRs and FWVs were created and implemented during this project. FCRs and FWVs were prepared and approved to address unexpected changes or to improve production. Each of the listed FCRs and FWVs under Section 3.12, along with their corresponding Navy approval, are presented in Appendix G. Note, the first five FCR/FWVs were signed off for approval by the Navy RPM, while the final FCR (-006) was approved via email provided for reference in Appendix G.
4. "Recommendations and Ongoing Activities" needs to clearly identify all Phase II work being deferred to the Phase III contractor, with cross-references to the approved FWV/FCR.	For clarity, Section 7.2, Recommendations and Outgoing Activities has been revised to include the following two new bullets: <ul style="list-style-type: none"> <li>• "Import, place, and compact the estimated 9,277 cy of fill required to complete construction of the foundation layer (Section 4.5), deferred from the Phase II RA; resolved August 15, 2019 during final site inspections with the Navy (Appendix B)</li> <li>• Install the final upgradient well network surface completions (Section 3.2.15), deferred from the Phase II RA; resolved under Navy approval of FCR-006 (Appendix G)"</li> </ul>
5. The Navy's "Certification Statement" should acknowledge the FWV/FCRs approved by the Navy, called out in the RACR (including design changes), and the specific Phase II work deferred to Phase III. Otherwise the certification is less meaningful and could be misconstrued as construction completed as originally designed.	For clarity the text of Section 8.0, Certification Statement, has been revised to read as follows: "I certify that this RACSR memorializes completion of the construction activities to implement the Work Plan at Parcel E-2 Phase II at HPNS, San Francisco, California specifically as follows: <ul style="list-style-type: none"> <li>• Construction of the shoreline revetment structure</li> <li>• Excavation for the freshwater and tidal wetlands</li> <li>• Site grading and consolidation of excavated soil, sediment, and debris</li> <li>• Installation of the Parcel E-2 upland slurry wall</li> </ul>

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	<ul style="list-style-type: none"> <li>• Radiological surface scanning, remediation, and clearance of the HPNS Parcel E-2 site</li> </ul> <p>The construction activities for the site were completed pursuant to the ROD (Navy, 2012) and the DBR (ERRG, 2014), and in accordance with the Work Plan (CB&amp;I, 2016), with deviations noted herein. This RACSR documents the implementation of a portion of the remedy selected in the ROD, specifically the shoreline revetment; site grading and consolidation of excavated soil, sediment, and debris; and upland slurry wall installation. Recommendations and ongoing activities have been presented in detail in Section 7.2 of this RACSR.”</p>
6. As indicated in Section 4.2, the slurry wall does not meet design specifications due to a subsurface obstruction. This appears to be a substantive design deviation. The RACR needs to identify the FWV/FCR that documents the change. The RACR also needs to adequately demonstrate, aside from a reference to a 1958 report, that weathered serpentine rock is creating the obstruction and why no alteration to the slurry wall is necessary to accommodate for such weathered obstruction.	<p>As designed, the upland slurry wall is considered a “hanging” slurry wall because it was not intended to key into an aquitard. While the RACR does document an approximate 200-foot section of the wall which was unable to obtain the full depth of design, the wall through this section was cut as deep as practical into the geologic feature encountered. Further evaluation of the groundwater modeling predictions presented as part of the DBR (Appendix F; ERRG. 2014) is considered outside the scope of this contract.</p> <p>See also response to San Francisco Bay Regional Water Quality Control Board comment #15.</p>
7. Was the survey discussed in Section 4.4, performed with QA by an independent source?	<p>During implementation of the Parcel E-2 RA, a third-party contractor (Battelle) was hired by the Navy to monitor and oversee the radiological data process and evaluation. While Battelle did not perform physical over-check surveys of the post excavation SU’s, they did periodically perform visual observations of APTIM’s in-process field surveys.</p>
8. In Section 4.5, 9,277 cubic yards of fill will be deferred to Phase III. Identify the FWV/FCR that support this change and include the deferred activity, cross-referenced to the appropriate FWV/FCR, in “Recommendations and Ongoing Activities.” See comments, above.	<p>For clarity, the final sentence of paragraph three to Section 4.5 has been revised to read as follows:</p> <p>“These punch list items, including deferral to import, place, and compact the estimated 9,277 cy of fill required to complete construction of the foundation layer, were verified as complete and acceptable by the Navy RPM on August 15, 2019.”</p> <p>See also response to comment #4 above.</p>
9. Section 4.6 states that well completion is pending removal of rock and placing of concrete collars on the wells (FCR 6 approved these changes). Include the deferred activity, cross-referenced to the appropriate FWV/FCR, in “Recommendations and Ongoing Activities.” See comments, above.	<p>Concur.</p> <p>See response to comment #4 above.</p>

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<p>10. In Section 4.8, demonstrate how the as-built condition of the cover remains protective given the risk modeling and the as-built conditions.</p>	<p>The risk modeling presented is in accordance with the approved Remedial Action Work Plan, Section 5.7 Risk Modeling, was to “perform risk modeling to demonstrate the radiological risk at the final ground surface.” This directive is also in accordance with the Navy’s Statement of Work issued in support of this Contract Task Order (N62473-12-D-2005), which states the Contractor shall, “...perform risk modeling that will demonstrate the radiological risk at the final ground surface (following installation of a demarcation layer and soil cover performed by others) is within the risk management range specified in the NCP (10-6 to 10-4).” Risk modeling for the interim site conditions, i.e., prior to installation of the final cover system, is considered outside the scope of this contract.</p>
<p>11. The Remedial Design Package (Remedial Action Monitoring Plan, Land Use Control Remedial Design, Operation and Maintenance Plan, and Construction Quality Assurance Plan) will need to be updated and/or revised prior to and after the Phase III project, including final landfill gas collection and control system and monitoring program and the leachate collection and control system.</p>	<p>Comment noted This work is beyond the scope of this contract. Any follow-on work will be addressed by the Navy. The RAMP for Parcel E-2 (ERRG, 2014) details the approach for landfill gas monitoring at Parcel E-2 as well as leachate extraction and treatment, if necessary; including specific procedures for future changes made to the RAMP (based on the monitoring results).</p>
<p>12. The standard practice in closing bayshore landfills where waste is partially under groundwater (with or without slurry wall containment) is to maintain an inward gradient from the Bay to the fill by pumping leachate and monitoring the gradient. We note that inboard extra wells have been constructed. The complete extraction and pumping system should be included in Phase III.</p>	<p>Comment noted This work is beyond the scope of this contract. Any follow-on work will be addressed by the Navy. The RAMP for Parcel E-2 (ERRG, 2014) details the approach for monitoring groundwater at Parcel E-2, including the constructed wetlands and the newly installed monitoring well network adjacent to the nearshore slurry wall. Specifically, Section 2.1.2 of the RAMP states that, “If the hydraulic gradient across, or the mound height upgradient of, the nearshore slurry wall exceed allowable limits [identified in the DBR], then a contingency action, consisting of groundwater extraction and treatment if necessary, will be implemented.” Should this contingency be activated, the Navy will revise the RAMP (in accordance with Section 7.0 of the RAMP) to address the extraction and pumping system, as necessary.</p>
<p>13. Has evaluation of the required pumping rates to maintain an inward gradient been completed or planned? If discharge of leachate to POTW is planned, the quality of the leachate should be characterized prior to the construction to verify the need for a pre-treatment, and discussion initiated to establish the viability and feasibility of obtaining a permit.</p>	<p>Comment noted This work is beyond the scope of this contract. Any follow-on work will be addressed by the Navy. In accordance with the RAMP for Parcel E-2 (ERRG, 2014), “Future monitoring data will be used to identify the appropriate extraction locations and rates necessary to create inward hydraulic gradients and</p>

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	<p>prevent discharge of groundwater contamination (from a specific location behind the nearshore slurry wall to the bay)."</p> <p>Section 6.1 of the RAMP outlines reporting requirements for groundwater monitoring, and Section 7 specifies procedures for future changes made to this document (based on the groundwater monitoring results).</p> <p>In addition, Section 7.2 of the Final RACSR has been revised to include the following recommendation for outgoing activities:</p> <p>"Collect depth-to-water measurements from the nearshore slurry wall piezometers during the next scheduled sampling event in order to verify that the hydraulic gradient across, and the mound height upgradient of, the nearshore slurry wall do not exceed the acceptable limits identified in the DBR"</p>
14. Description of as-built design changes from approved plans and specifications is a standard requirement for construction but they are not found in the RACR, nor in the plans and specification as red markups. There are a few red markups, but they are not legible. The RACR should include a section describing design changes, and full markup of the plans and specifications.	The RACSR (formerly RACR) provides Section 3.12, Deviations from Planning Documents to describe as-built design changes from the approved plans and specifications. Reviewing, editing, or otherwise marking up the Navy's approved plans and specifications is beyond the scope of this contract.
15. Please verify the removal and proper disposal of the construction and demolition debris that are noted in Appendix X (Waste Manifest Data) as still on-site.	The material in question was not removed from site until after the submittal of the Draft (Phase II) RACR, now RACSR. To finalize this table, the Date of Transportation for Construction Debris, (RSY pad plastic and Building 258 general debris), has been revised to read: "December 6, 2019."
<p>16. Appendix X Waste Manifest and Waste Data</p> <p>a. The information and presentation don't clearly verify that soils and other wastes were managed appropriately and that the remediation goals of Tables 1-3 were met. Summary tables with sampling data and statistics (and/or prior investigation results) compared with non-hazardous thresholds where the waste was managed as non-hazardous would be helpful, as would verifying that the sampling data remediation goals have been met. The manifest copies are not signed.</p> <p>b. It appears that the Tidal and Freshwater Wetlands Confirmation Testing results indicate locations where hot spot goals were exceeded (red color). Please clarify and if true, describe the actions taken or to be taken to address these exceedances.</p>	<p>a. The final version of Appendix X has been revised to include an updated Table, Summary of Waste Materials from Parcel E-2, showing the final disposition of all off-site waste streams accompanied by a tabulated summary of the supporting waste sample results. Waste manifests will be reviewed to ensure the final signed versions are represented.</p> <p>b. No soil exceeding lead criteria were left in the excavation of the Tidal Wetlands and Freshwater Wetland. For better clarity of work completed in these areas, the RACSR (formerly RACR) has been revised to move the discussion, tables and figures associated with the Tidal Wetland and Freshwater Wetland excavation, confirmation sampling and figures forward to the main text.</p>
17. Appendix AA (Draft Soil Data, Laboratory Data Quality Assessment Summary Report). The PCB results for sample TW-EB-T66-001 were	Further investigation of laboratory raw data was subsequently performed based on the "rejection" findings in the validation report. The laboratory

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<p>rejected. Section 1.5 states, “Surrogate recoveries were less than 10% for some PCB samples, all detected compounds were qualified as “J-“ and all non-detected compounds as “R”. The second surrogate was within control limits. Although the data were qualified as estimated due to noncompliant surrogate recoveries, data usability was not affected.”</p> <p>The RACR does not provide a figure identifying the locations and depths of collected samples or table summaries of the final results. It appears from the sample nomenclature, that this sample was collected in the Tidal Wetland (TW) area (Figure 5). Assuming this is a sediment sample, the “Hot Spot Goal” per Table 1 is 1.8 mg/kg for PCBs in sediment. Please address how these unusable data affected the soil and sediment remedial action goals specified in Section 2.0 of the RACR.</p>	<p>narrative reported surrogate recovery was affected by “evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.”</p> <p>PCB analysis is performed using 2 columns and detectors for confirmation purposes. The laboratory primarily reports from Column A. The severe interference and low recovery were observed with Column A analysis. Column B results showed less interference and higher surrogate recovers (19.2%), which is above the data validation rejection criteria. Both columns indicate PCBs were not detected in the sample. The final results will be reported from Column B, with J (estimated) qualifier to indicate matrix interference with possible low bias, but still usable for project decisions.</p> <p>EPA protocol also states to “Use professional judgment in qualifying data, as surrogate recovery problems may not directly apply to target analytes.”</p>
<p>18. Additional comments on the rad portions of the RACR may be forthcoming, as appropriate.</p>	<p>The CDPH RHB Branch has no comments per March 5, 2020 letter from DTSC, Juanita Bacey.</p>
<p>19. <u>EPA rejects the RTC and Draft Final RACR as not responsive to EPA concerns and comments of March 6, 2020. EPA also supports the Water Board’s concerns and rationale transmitted by Jeff White on August 7, 2020.</u></p>	<p>Response to the Water Board’s comments have been expanded to further describe the Navy’s evaluation of long-term performance of the upland slurry wall and freshwater wetlands.</p> <p>For details, please refer to the Navy’s response to Water Board Comment #17.</p>
<p>20. <u>A revised Appendix AA is needed but was not provided. According to the Navy’s RTC to EPA’s March 6 Comment 17, the PCB results for sample TW-EB-T66-001 were revised in response to EPA’s comment. This warrants a revised Appendix AA, but none was provided.</u></p>	<p>No laboratory results were revised in response to EPA’s comment #17; however, Section 1.5 of the Laboratory Data Quality Assessment Summary Report (App AA) was revised to read as follows:</p> <p>“The primary reason for surrogate nonconformance was “not measurable” surrogate recoveries due to sample dilution for samples with high TPH and/or high PCB concentrations. The samples and listed analytes were qualified as estimated (J) or (UJ), reason code S, to indicate a possible bias in the results. Surrogate recoveries were less than 10% for some <del>one</del> PCB samples, all detected compound were qualified as “J” and all non-detected compounds as “R”. The second surrogate was within control limits, <u>and the laboratory indicated matrix interference with the first surrogate. The sample results were qualified J/UJ.</u>”</p> <p>Table 3 also had a minor change related to this comment (page 13 of 13), updating the sample qualifiers as noted above.</p>
<p>21. <u>The responses to EPA’s March 6 Comments 11, 12, and 13 are inadequate. To the extent the Navy believes this work is beyond the</u></p>	<p>For convenience in review, the response to EPA’s comments 11, 12, and 13 have been amended above.</p>

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<p>scope of the Phase II RACR, please provide an explanation and the specific document(s) and schedule that will address our comments and the associated work that needs to be performed to complete the remediation of Parcel E-2. All phases in Parcel E-2 need to be integrated and coordinated to ensure compliance not only with the ROD, but applicable and standard practices for landfill closure and remediation.</p>	
<p>22. <u>Appendix X. As EPA indicated in our March 6 comments, we are concerned with Appendix X and the lack of verification and cross-references that demonstrate that lead-contaminated soils were properly characterized and disposed.</u> In addition, any exceptions to accumulation times of hazardous waste need to be specifically cited (e.g., regulatory authority, policy, regulatory approval for the deviation, etc.). We concur with the Water Board's concerns and rationale reiterated in its August 7 comments.</p> <ol style="list-style-type: none"> <li>The RTC states that no contamination was left in place, indicating that no soil exceeding thresholds was left in place. However, the Draft Final RACR text, tables, and figures do not clearly show this to be the case. A few examples, follow, but should not be construed as an exhaustive list to adequately address EPA's concerns.</li> <li>The text and Attachment 1 of Appendix X do not clearly state that no soil exceeding thresholds was left in place.</li> <li>The step out process includes up to three step outs (tiers 1, 2, and 3) and if step-out excavation concentrations are still above criteria, the Navy Remedial Project Manager will be contacted for further directions. The specific sample grids should be identified and included in separate figures based on the constituent and number of step-outs performed. Identify all step-outs that failed the third step and what further actions were conducted directed by the Navy Remedial Project Manager.</li> <li>The text and figures do not clearly show how the test pits were coordinated with the step-outs. Figures should distinguish test pit sampling results from confirmation results.</li> <li>Tables 5-7 should break out confirmation results to verify compliance by sample grid; mixing of sampling numbers with grids embedded is confusing and difficult follow.</li> </ol>	<p>The Tidal and Freshwater Wetlands confirmation tabulated data was formerly presented in Appendix X. However, for better clarity, the Final RACSR has been revised to move the discussion, tables and figures associated with the Tidal Wetland and Freshwater Wetland confirmation sampling forward to the main text (Section 3.2.10.1).</p> <p>See also the revised response to Water Board's comments 17 and 18.</p> <ol style="list-style-type: none"> <li>The EPA's concerns have been noted and steps have been taken to improve the clarity of the Final RACSR as noted herein.</li> <li>For clarity, several lines of text have been added to Section 3.2.10.1 of the Final RACSR, introducing new Figures 5 through 8, as well as new Tables 5 through 7 which summarize the progression of the chemical confirmation testing results. Figure 8 specifically shows the final bounded limits of the over-excavation for the final lead excavation.</li> <li>New Figures 5 through 8 show the radiological screening and chemical sample locations, summarizing the analytical strategy for the freshwater and tidal wetlands, while Tables 5 through 7 summarize the progression of the chemical confirmation testing results. There were no instances where a third step-out failed to meet the project action limit.</li> <li>The test pits, which fell completely within the limits of the bounded lead soil excavation (Figure 8), were used only for internal planning purposes. Figure 8 has been simplified to show only the bounding confirmation sample locations, demonstrating that all lead-contaminated soils were properly removed.</li> <li>Tables 5-7 have been simplified for clarity, by clearly grouping/labeling all failed samples targeted for over excavation with the resulting bounded sample.</li> <li>Sample ID FW- SW-F08-001, as shown on Figure 6, represents the western sidewall sample for Freshwater Grid F08. As the western boundary expanded (Figure 8) the length of sidewall</li> </ol>

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<p>f. Table 5 FW-SW-F08-001 is incomplete, showing the first result failing for lead at 2,600 mg/kg, the second result as failing (red) but no result provided, and the third result (Final) as black indicating compliance.</p> <p>g. Table 6 (Tier 2) mixes sample numbers of test pits and confirmation samples. These should be clearly identified in the Figure.</p> <p>h. Figures should cross-reference the table where the data is compiled.</p> <p>i. Verify if there were no Tier 3 step outs or Tier 3 failures. If there were such step outs, they need to be identified.</p>	<p>increased requiring three additional sidewall step-out samples; FW-SW-F08-SO-002, -003, and -004. These results, as depicted on Figure 6, represent the passing results for the initial sample ID FW-SW-F08-001.</p> <p>g) Table 6 has been re-organized to group the initial confirmation samples, test pit samples, and final confirmation samples for ease in review. For clarity, Figure 8 has been simplified to show only the final confirmation sample locations (From Table 6). In addition, the location of the investigatory test pits have been added to Figure 6 as evidence that all lead-contaminated soils were properly removed.</p> <p>h) A new note has been added to each of the new figures (Figures 6 through 8) to reference the corresponding table where the full sample data was compiled.</p> <p>i) There were no instances where a third step-out failed to meet the project action limit.</p>
<p>23. Appendix X. The analytical data needs to be compiled in summary to verify that wastes were characterized, managed, transported, and disposed of in accordance with federal and state laws. Provide the full testing required (including CA WET) and thresholds to verify that the non-hazardous soils disposed of in the Potrero Landfill were in accordance with CA requirements.</p>	<p>Appendix X is revised to include three new summary tables; Table 1 - Freshwater Wetlands Lead Excavation Waste Soil Characterization, Table 2 - Pre-Treatment Characterization Soil Samples, Freshwater Wetlands Lead Excavation, and Table 3 - Parcel F Waste Characterization Sample Results.</p>
<p>24. EPA's concerns with documenting FWV/FCR are not adequately addressed. Because this is a RACR, the Section 3.13 Deviations from Planning Documents should list every deviation from the Remedial Design and RAWP documents. This includes every change order, every field design change (no matter how small), and field condition that was not anticipated in the Design or RAWP. In addition, discuss the possible, potential, or actual impact of each deviation on the intended Remedial Action, and prepare a technical analysis, (including calculations and modeling results) for all significant deviations</p>	<p>As summarized in Section 3.12, Deviations from Planning Documents: A total of six FCRs and FWVs were created and implemented during the Phase II remedial action. Upon identifying a potential issue with the upland slurry wall, the Navy initiated a field investigation to determine what, if any, change would need to be made to the design. The Navy ultimately determined that the wall should function appropriately as installed and that no field change was required. All other Phase II construction RAs were installed as detailed within the Final RACSR and are expected to function as designed. RAMP</p> <p>As presented in Section 4.2 of the Final RACSR, the upland slurry wall is expected to divert groundwater flow as designed to adequately control the generation of leachate. Further evaluation of the long-term performance of the upland slurry wall and freshwater wetlands will be conducted in accordance with the Parcel E-2 RAMP and the Post- Remedial Action Study Work Plan.</p>



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<p>25. EPA's concerns with the design and installation change resulting in a 220-foot gap in the upland slurry wall (a substantive deviation not listed in Section 3.13) are not adequately addressed. Impacts to the design purpose and any other associated impacts need to be technically evaluated and should have been completed during construction and presented in this RACR. Accordingly, the Navy must provide, in a detailed quantitative analysis, the effects of the obstruction on groundwater quantities flowing into the landfill and ultimately to the Bay, and on groundwater quantities diverted to the wetland. The analysis, calculations, and groundwater flow and any contaminant transport modeling results must be provided to the Agencies for review and comment as part of this FFA RACR document. The EPA supports the Water Board's concern and rationale reiterated in its August 7 comments.</p>	<p>Installation of the upland slurry wall is discussed in detail within Section 3.2.14 of the Final RACSR, with the demonstration of completion presented in Section 4.2 which has been revised to include the following statement:</p> <p>"In addition, the obstruction appears to form its own barrier in this section of the slurry wall alignment. As such, even though the hanging slurry wall installation was not completed exactly as designed, the Navy anticipates it will function equally as well due to the geologic obstruction diverting water away from the landfill. Therefore, the Navy recommends leaving the slurry wall as currently constructed with no further alterations to the target depth.</p> <p>Further evaluation of the long-term performance of the upland slurry wall and freshwater wetlands will be conducted in accordance with the RAMP for Parcel E-2 (ERRG, 2014), and in the Five-Year Review. No further action is required for this RA component; however, the Navy plans to prepare a post-remedial action study work plan to evaluate whether the Phase II remedy is operational and functional. This forthcoming work plan will describe the specific tasks needed to conduct ongoing routine performance monitoring, as necessary, to evaluate the performance of the remedy as installed until the full scope of the DBR (ERRG, 2014) has been implemented. Once all phases of the Parcel E-2 RA are completed and requirements of the ROD (Navy, 2012) are met the documentation that the RAOs have been achieved will be presented in the final remedial action completion report for the site."</p> <p>See also response to the Water Board's Comment #17.</p>
<p>26. The entire TOC and List of Tables, Figures, &amp; Appendices should be bookmarked for ease of use. Also bookmark in-text references to Figures, Tables, Appendices, and technical references.</p>	<p>Comment noted. The entire TOC, including the list of tables, figures, and appendices, as well as appropriate in-text references, will be bookmarked for ease in review upon issuing the Final RACSR (formerly RACR).</p>

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Comment	Response
<p>1. Section 3.2.10.1, Excavation to Construct Future Wetlands Bottom excavation was extended 5 feet laterally and 1 foot deeper due to a post-excavation bottom sample analytical result exceeding a hot spot cleanup goal. This resulted in an over-excavation volume of less than 1 cubic yard (yd<sup>3</sup>). This bottom soil volume removed is not commensurate with the in-situ soil volume represented by the failed sample analytical result (93 yd<sup>3</sup>). According to the Phase II Remedial Action Work Plan (Phase II RAWP) on page 7-9, soil was to have been “removed along the exposed sidewall face a maximum of 25 feet on each side of a failed sidewall sample (and 2 feet outward),” due to a post-excavation sidewall sample analytical result exceeding a hot spot cleanup goal. Yet, according to the Phase II RACR, soil was removed 5 feet on each side of a failed sidewall sample, resulting in an over-excavation volume of approximately 3 yd<sup>3</sup>. This sidewall soil volume removed (3 yd<sup>3</sup>) is not commensurate with the in-situ soil volume represented by the failed sample analytical result (15 yd<sup>3</sup>). Comment 1: Although over-excavation dimensions generally follow the approved Phase II RAWP, we are concerned that over-excavation of contamination was not extensive enough to achieve the hot spot goals throughout the Freshwater Wetland and, consequently, residual pollutants may impact the health of the Freshwater wetland and the Bay.</p>	<p>No contamination was left in place. The over excavation process started with a 5’ lateral step out on each side of exceeding sidewall sample and a 2 feet step back (deep). Then 3 additional confirmation samples were collected from the new sidewalls step out. If the lateral distance of 5’ was not sufficient, the step out sample would identify further excavation was necessary until the final limits of contamination were bounded (see new WP Figure 8). This process did work to expose sidewalls requiring further excavation, as described in the additional lead excavation performed in the Freshwater Wetland Grid F25.</p>
<p>2. The Phase II RACR states on page 3-10 that “chemical confirmation results exceeded the appropriate hot spot goals in sample grid locations (SU freshwater [FW]) FW-7, -08, -09, -25, -33, and -47 (Figure 5).” The survey unit (SU) grid shown on Figure 5 is not the sampling grid layout shown on multiple figures presented in Appendix G and Appendix X, which was used for cleanup of Freshwater Wetland soil. a. Refer to the appropriate figures and sample grid system b. There was a hot spot goal exceedance for lead at grid location F46. Describe this hot spot goal exceedance and remedial action. c. At grid locations F22 and F29, there were hot spot goal exceedances for combined total petroleum Hydrocarbons (TPH; or summed gasoline-range hydrocarbons [TPH<sub>GRO</sub>] and motor oil-range hydrocarbons [TPH<sub>MORO</sub>]). Describe these hot spot goal exceedances and remedial actions.</p>	<p>The Radiological Survey Unit Grids are not the same as the Freshwater and Tidal Wetlands excavation chemical confirmation sampling grids. No soil exceeding lead or TPH criteria were left in the excavation of the Tidal Wetlands or Freshwater Wetland. Exceedances were removed. For better clarity, the RACSR (formerly RACR) has been revised to move the discussion, tables and figures associated with the Tidal Wetland and Freshwater Wetland excavation, confirmation sampling to the main text.</p>
<p>3. It is unclear why summed concentrations of TPH<sub>GRO</sub> and TPH<sub>MORO</sub>, rather than TPH<sub>DRO</sub> and TPH<sub>MORO</sub>, were used for comparison of soil sample analytical results to the TPH hot spot goal.</p>	<p>Total TPH concentrations are calculated by adding all three TPH results (TPH<sub>GRO</sub>, TPH<sub>DRO</sub> and TPH<sub>MORO</sub>) concentrations. Reporting limits for results qualified as not detected (U) are not additive.</p>

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<p>Please explain.</p>	<p>e.g.  <math>35J + 45U + 35 = 70</math>  <math>35J + 45J + 35U = 80J</math>  <math>35U + 45U + 35U = 45U</math>  The data tables have been reviewed and revised to correct addition errors as necessary.</p>
<p>4. It is unclear why 9 to 11 months elapsed between initial confirmation sampling and follow-on, step-out confirmation sampling, as was the case at grid locations F22, F29, and at other locations. Extended exposure of TPH-contaminated soil to the elements (sun, wind, rain) may explain apparent cleanup to levels below the TPH hot spot goal when, in reality, residual TPH-contaminated soil remains in the Freshwater Wetland. Explain the long duration of time between sampling events at grid locations F22, F29, and at other locations. It may be necessary to resample at TPH-contaminated locations to demonstrate attainment of the TPH hot spot goal.</p>	<p>The long duration between initial excavation and remediation is a product of the danger associated with sampling a very large area that is excavated to bay mud. 95% of the samples collected required mechanical assistance through the use of an excavator. The length of time between initial confirmation and follow-up is a direct result of having to wait for an excavator to be available to assist in the follow-up remediation steps. Regarding Freshwater Wetland samples collected at F22 and F29, these two locations contained <del>6 to 7</del> several feet of water and required bottom remediation. Remediation could only be done using an excavator capable of reaching the bottom of the excavation. Further delay occurred while waiting for a machine to be free. Given the volume of water contained within the open lead excavation area, a decision was made to allow for as much water as possible to evaporate prior to resuming additional excavation and sampling.</p>
<p>5. On the last page of Appendix E, Low Level Radiological Waste Manifests, a document, dated October 17, 2018, summarizes the lead concentrations for the following low-level radiological waste (LLRW) drum samples C8-U11 (13,000 mg/kg); and D12-U7 (140,000 mg/kg). The document states: “Per the APTIM Parcel E-2 Work Plan, Section 5.5.4 “A minimum of 1 foot in each direction of the surrounding soil will be removed and designated as LLRW. Therefore this soil was collected and designated as LLRW...Therefore, in accordance with BB&amp;E guidelines, APTIM presented these materials to BB&amp;E (HPNS) for radiological characterization and disposal.” Describe the “2 [LLRO] remediations” in sufficient detail and show the areas on one or more maps. Provide acceptable documentation demonstrating the removal of a minimum of 1 foot in each direction of the surrounding soil, as well as the results of sampling and analysis demonstrating the attainment of hot spot goals. Provide an acceptable technical justification for over-excavating only 3 ft<sup>3</sup>, given the level of lead contamination in this LLRW. Provide the waste characterization laboratory analytical reports; completed,</p>	<p>The objects in question were detected and remediated from an RSY pad, specifically RSY pad C8 Use 11 and D12 Use 17. Figure 4 shows the layout of the RSY pad area. LLRO remediations are discussed in Appendix Z, RSY Pad Data Packages. In summary, the remediation referenced was not directly in response to lead contamination remediation. The minimum one-foot remediation, and the reference to the work plan text, is for LLRO remediation. The soil that the letter in Appendix E is talking about is the soil that was removed as a result of LLRO remediation which was designated LLRW.  Disposal of this lead-contaminated LLRW is presented in Appendix E. This work requires licensed controls due to the presence of radioactive materials and the subsequent potential for occupational exposures, both of which are subject to oversight by the Nuclear Regulatory Commission (NRC) and/or the California Department of Public Health (CDPH). As more than one company is contracted by the Navy to perform radiological work at HPNS, a memorandum of understanding (MOU) was approved by</p>

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<p>approved disposal facility waste profile documents; and the manifests that account for the transportation and disposal of this lead-contaminated LLRW.</p>	<p>each contractor's Licensed Radiation Safety Officer which outlines the responsibilities of each contractor as applicable to their respective scopes of work and Radioactive Materials License requirements at HPNS. Soil and sediment identified as LLRW was loaded in sealable bins provided by the U.S. Army Joint Munitions Command (USAJMC) contractor. 4 LLRW bins and 1 drum containing approximately 85 cy of soil and other materials were ultimately transferred to the Navy's certified waste broker B &amp; B Environmental Safety, Inc. (BBES) as described in the MOU (June, 2016). BBES was ultimately responsible for the transportation and disposal of the LLRW. APTIM is not provided copies of the disposal manifests from the LLRW broker; therefore, LLRW manifest documentation will be addressed in the forthcoming Post-Remedial Action Study Work Plan.</p>
<p>6. As stated in Field Work Variance No. 5 (Appendix G), dated May 29, 2018, the Freshwater Wetland step-out, over-excavation "process has cleared all sample grid locations except for F08 and F25, which continue to demonstrate elevated concentrations for Lead (Figure 2)." At grid locations FW-SW-F25-SO-005 and FW-SW-F25-SO-006, lead was present in soil at concentrations of 33,000 mg/kg and 2,100 mg/kg along the south and west sidewalls (third over-excavation). It does not appear that sidewall over-excavation was extended to achieve the hot spot goal. Provide documentation that sidewall over-excavation was extended to achieve the hot spot goal along the south and west sidewalls at FW-SW-F25-SO-005 and FW-SW-F25-SO-006. If the lead-contaminated soil at those locations was not acceptable removed, then provide a plan to address residual lead in soil where present at concentrations above the hot spot goal.</p>	<p>The sidewall exceedances observed in FW-F25 were addressed in the lead investigation efforts. Specifically, the western sidewall was completely excavated with metal debris and located adjacent to FW-F08 and FW-F16. For better clarity, the RACSR (formerly RACR) has been revised to move the discussion, tables and figures associated with the Tidal Wetland and Freshwater Wetland excavation, confirmation sampling to the main text.</p>
<p>7. Field Work Variance No. 5 (Appendix G) describes an effort to establish the extent of lead contamination west of sampling grids F08 and F16, by exploratory test pitting, sampling, and analysis for lead. Based on the laboratory analytical results, the bounded area shown on Figure 2 was proposed for over-excavation, to an approximate depth of 4 to 7 feet bgs. However, the Phase II RACR does not provide information sufficient to determine whether or not the lead-contaminated soil within the bounded area was removed and properly disposed. A. Describe whether or not the bounded area on Figure 2 was actually over-excavated. If it was, then provide acceptable documentation of the work</p>	<ol style="list-style-type: none"> <li>No soil exceeding lead criteria were left in the excavation of the lead contamination conducted under FWV #5. For better clarity, a new Figure 8 has been added to the RACSR (formerly RACR) showing the excavations limits and the lead results of final confirmation samples.</li> <li>The referenced figure has been replaced with a new RACR figure, Figure 8, which shows the final bounded limits of the over-excavation for the final lead excavation.</li> <li>During the initial phases of chasing the lead contamination in the sidewall of FW-SW-F25, the concentrations were so high only selected samples were analyzed to make decisions. The final lead</li> </ol>

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<p>and the results of confirmation sampling and analyses demonstrating the attainment of hot spot goals.</p> <p>On Figure 2, the planned limits for over-excavation of lead-contaminated soil overlap sampling grids F08 and F16. However, the nomenclature used for the test pit samples includes “F25”, which is also a grid location some distance away from the test pits (and addressed by Comment 6 above).</p> <p>B. Confirm that the locations of the test pits and planned over-excavation are as they appear on Figure 2.</p> <p>C. It is not clear why for some step-out, sidewall over-excavations three confirmation samples were collected (e.g., FW-SW-F25-SO-002, -003, and -004 on 2/15/18 for the 35,000 mg/kg south sidewall exceedance of 12/20/17), and for other excavations only one sample was collected (e.g., FW-SW-F25-SO-005 on 3/6/18 for the 48,000 mg/kg south sidewall exceedance on 2/15/18 and FW-SW-F25-SO-006 on 3/6/18 for the 46,000 mg/kg west sidewall exceedance on 2/15/18). Explain the rationale for collecting either one or three sidewall confirmation samples. Identify where in the Phase II RAWP the sampling frequency is described.</p> <p>D. In Appendix G, the table “HPNS Parcel E-2 Tidal and Freshwater Wetlands Confirmation Testing Results” includes lead results for FW-EB-PBOX- series and FW-SW-PBOX-series samples. Identify on a map these sample locations, and describe in the text what the results represent, as well as any follow-on action performed or still necessary to address lead contamination of up to 15,000 mg/kg (FW-SW-PBOX01-S003).</p>	<p>excavation limits are shown in Figure 8 and show the final lead concentrations in the excavation sidewalls and bottom. The final bottom and sidewall confirmation samples are compliant with RAWP required frequency.</p> <p>Sampling frequency is described in greater detail within the Phase II RAWP under Section 7.2.1.2, “Step-Out Excavations” and the SAP, Appendix B, Worksheet #17, Section 17.1, “Excavation and Site Grading.”</p> <p>d. New RACSR figure 8 shows the location of the final samples for the lead. New RACSR Table 6, shows the progression of lead results from initial to final.</p>																								
<p>8. Appendix X describes an investigation in the “Metal Slag and Ship Shielding Area.” Six five-foot deep by four-foot wide excavations were completed to characterize the extent of lead contamination (Figure 4). Bottom samples were collected at 5 feet and sidewall samples at 2.5 feet (only the sidewall facing the Freshwater Wetland was sampled). Samples were analyzed for lead, and the results are summarized below.</p> <table><tr><th>Location</th><th>Bottom</th><th>Sidewall</th><th>Location</th><th>Bottom</th><th>Sidewall</th></tr><tr><td>FW-F16-ID-001</td><td>190,000</td><td>89,000</td><td>FW-F25-ID-001</td><td>5,300</td><td>75,000</td></tr><tr><td>FW-F16-ID-002</td><td>640</td><td>23,000</td><td>FW-F25-ID-002</td><td>14,000</td><td>190</td></tr><tr><td>FW-F16-ID-003</td><td>290</td><td>27,000</td><td>FW-F25-ID-003</td><td>61</td><td>1,200</td></tr></table> <p>Note: Results expressed in mg/kg. Results in red exceed the hot spot cleanup goal for lead.</p> <p>Appendix X describes the following actions taken (presumably) to excavate the lead contamination in the Metal Slag and Ship Shielding Area.</p> <ul style="list-style-type: none"><li>• An Area around 100 feet by 100 feet was excavated</li><li>• Three sidewall locations required over-excavation</li></ul>	Location	Bottom	Sidewall	Location	Bottom	Sidewall	FW-F16-ID-001	190,000	89,000	FW-F25-ID-001	5,300	75,000	FW-F16-ID-002	640	23,000	FW-F25-ID-002	14,000	190	FW-F16-ID-003	290	27,000	FW-F25-ID-003	61	1,200	<p>No soil exceeding lead criteria were left in the excavation of the lead contamination conducted under FWV #5. For better clarity, a new figure (Figure 8) has been added to the RACSR (formerly RACR) showing the excavations limits and the lead results of final confirmation samples. A new table, Table 8, has been added to summarize the progression of sample results.</p> <p>For better clarity, the Final RACSR has been revised to move the discussion, tables and figures associated with the Tidal Wetland, and Freshwater Wetland and lead excavation, confirmation sampling to the main text.</p> <p>Specifically, new figures 5 through 8 show the radiological screening and chemical sample locations summarizing the analytical strategy for the freshwater and tidal wetlands, while new tables 5 through 7 summarize the progression of the chemical confirmation testing results.</p>
Location	Bottom	Sidewall	Location	Bottom	Sidewall																				
FW-F16-ID-001	190,000	89,000	FW-F25-ID-001	5,300	75,000																				
FW-F16-ID-002	640	23,000	FW-F25-ID-002	14,000	190																				
FW-F16-ID-003	290	27,000	FW-F25-ID-003	61	1,200																				

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<ul style="list-style-type: none"> <li>• One bottom sample required over-excavation (to 7 feet bgs). The level of detail provided for this excavation work is inadequate. The Phase II RACR, among other things, should: <ul style="list-style-type: none"> <li>a. Clarify whether or not this excavation removed soil within the bounded area shown on Figure 4 (and Figure 2 of Appendix G).</li> <li>b. Depict the 100-feet by 100-feet excavation on a map.</li> <li>c. Describe the excavation depths.</li> <li>d. Present the results of confirmation sampling and analyses that demonstrate removal of the full extent of lead contamination where present at concentrations above the hot spot goal.</li> <li>e. If it cannot be demonstrated that the full extent of lead-contaminated soil was removed, then provide a plan to address unacceptable levels of residual lead in soil.</li> </ul> </li> </ul>	
<p>9. Appendix X states that “the [soil] waste [excavated from the Metal Slag and Ship Shielding Area] was characterized and stockpiled for off-site disposal. Resource Conservation and Recovery Act [RCRA] profiling is currently being done by U.S. Ecology under profile #070284198-0.”</p> <ul style="list-style-type: none"> <li>a. Provide (or identify where in the Phase II RACR is located) all waste characterization laboratory analytical data and the completed, approved disposal facility waste profile documents.</li> <li>b. Given that this RCRA hazardous waste (soil) was stored on the site for an extended period, from about May 2018 to July 22, 2019, provide all Waste Inventory Logs and Waste Storage Area Inspection Checklists.</li> <li>c. Include all Uniform Hazardous Waste Manifests (both Generator and TSDF-to-Generator copies), as well as any Land Disposal Restrictions documents.</li> </ul>	<ul style="list-style-type: none"> <li>a. The final version of Appendix X has been revised to include an updated Table, Summary of Waste Materials from Parcel E-2, showing the final disposition of all off-site waste streams accompanied by a tabulated summary of the supporting waste sample results. Lab results for waste samples are included in Appendix AA, Analytical Data and Validation Reports.</li> <li>b. Although the soil in question was classified as a RCRA hazardous waste, work within the HPNS Parcel E-2 site was conducted in accordance with CERCLA guidance, and the excavated soils were stockpiled within a contiguous area of contamination (AOC). Per EPA guidance, under AOC policy, consolidation is not considered to be removal, thus contaminated soil can be consolidated or managed within the AOC and a hazardous waste determination can be made after such consolidation.</li> <li>c. A summary of all required field documentation will be provided as part of the Final RACSR submittal.</li> </ul>
<p>10. According to Appendix X, white crystalline lead oxide particles were observed, and samples were collected and analyzed. The maximum lead concentration was 190,000 mg/kg at location FW-EB-F16-ID-001. Appendix X states that “it would make sense that contamination was a direct result of the lead oxide that was previously used in the ship shielding area.” Describe the relationship of the lead contamination discovered during 2018 exploratory test pitting in the “Metal Slag and Ship Shielding Area (App X, Fig. 4),” to the contamination in the Metal Slag Area and the Ship Shielding</p>	<p>The quoted statement was entered into the daily field paperwork as a statement of “opinion” by the on-site field chemist and was not intended as a statement of fact. For clarity, this statement will be stricken from the revised version of Appendix X. Any further investigation as to the relationship of the lead contamination discovered and past site activities should be considered outside the scope of APTIM’s current contract.</p>

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Area cleaned up from June 2005 to May 2006, and from May 2012 to October 2012, respectively, by time-critical removal actions (TCRAs).	
11. In Appendix X, there are untitled tables with summary laboratory analytical results for various constituents for the following samples: PE2-SP-FW-COMP01, PE2-SP-FW-COMP02, PE2-SP-FW-COMP3, PE2SP-FW-DU1, PE2-SP-FW-DU2, PE2-SP-FW-DU3, and PE2-SP-FW-FD1. Identify on one or more maps the locations of the above-listed samples, describe in the text what the results represent, as well as any follow-on actions performed or still necessary to address the contamination indicated in the tables for those samples.	For better clarity, the RACSR (formerly RACR) has been revised to move the discussion, tables and figures associated with the Tidal Wetland, and Freshwater Wetland and lead excavation, confirmation sampling to the main text.
12. In the Appendix X table, "Summary of Waste Materials from Parcel E-2" is indicated shipments of RCRA hazardous waste (soil) originating from the Freshwater Wetland Over-excavation and totaling 2,000 tons. On July 22, 2019, the RCRA hazardous waste (soil) was apparently transported to the US Ecology disposal facility in Beatty, Nevada. Based on the sampling dates provided in the Appendix X table, "HPNS Parcel E-2 Tidal and Freshwater Wetlands Confirmation Testing Results," waste soil containing elevated lead would have accumulated on site from about October 2017 to July 22, 2019. a. Include (or identify where in the Phase II RACR is located) all waste characterization laboratory analytical data and the completed, approved disposal facility waste profile documents. b. Given that this RCRA hazardous waste (soil) was stored on the site for an extended period, from about May 2018 to July 22, 2019, provide all Waste Inventory Logs and Waste Storage Area Inspection Checklists c. Include all Uniform Hazardous Waste Manifests (both Generator and TSDF-to-Generator copies), as well as any Land Disposal Restrictions documents	<ul style="list-style-type: none"> <li>a. The final version of Appendix X has been revised to include an updated Table, Summary of Waste Materials from Parcel E-2, showing the final disposition of all off-site waste streams accompanied by a tabulated summary of the supporting waste sample results. Lab results for waste samples are included in Appendix AA, Analytical Data and Validation Reports.</li> <li>b. Per EPA guidance, under AOC policy, consolidation is not considered to be removal, thus contaminated soil can be consolidated or managed within the AOC and a hazardous waste determination can be made after such consolidation.</li> <li>c. A summary of all required field documentation will be provided as part of the Final RACSR submittal.</li> </ul>
13. Discharge of Lead to the Bay – As described above, we are concerned that residual contamination poses a threat to the health of the Freshwater Wetland and the Bay Given the proximity of lead oxide particles and lead-contaminated soil to the Freshwater Wetland, Freshwater Wetland Outfall, and the rock-lined swale that discharges to the Bay, evaluate the risks of exposure to terrestrial and aquatic wildlife. We recommend sampling and testing water of the Freshwater Wetland and the Freshwater Wetland Outfall, to evaluate the risks. Describe the results of the evaluation.	<p>All of the lead contamination identified in the Freshwater Wetland grid F16 and F25 was removed for off-site disposal under FWV#05. New RACSR Figure 8 shows the location of the final bounding samples for the lead. New RACSR Table 5, shows the progression of lead results from initial to final.</p> <p>Additional investigation, including a complete fate and transport evaluation, should be considered outside the scope of APTIM's current contract.</p>

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<p>14. Section 3.2, Remedial Action Objectives</p> <p>The control of groundwater via the Upland Slurry Wall and French drain, as well as by other remedies (Nearshore Slurry Wall and monitoring well network), will address the groundwater remedial action objectives (RAOs) for the protection of wildlife and are as follows:</p> <p>Prevent or minimize migration of chemicals of potential ecological concern to prevent discharge that would result in concentrations greater than the corresponding water quality criteria for aquatic wildlife.</p> <p>Prevent or minimize migration of A-aquifer groundwater containing total TPH concentrations greater than the remediation goal (where commingled with CERCLA substances) into SF Bay.</p> <p>Given that there is the 220-foot gap in the Upland Slurry Wall, described in detail how the performance of the Upland Slurry Wall will be monitored to ensure the achievement of the RAOs. Identify the monitoring well(s) between the Upland Slurry Wall and the Bay, to be used to monitor the performance of Upland Slurry Wall. Discuss whether or not the Remedial Action Monitoring Plan should be updated to account for the 220-foot gap in the Upland Slurry Wall through which A-Zone groundwater flows to the landfill, leaches landfill contamination, and travels to the Bay.</p>	<p>As designed, the upland slurry wall is considered a “hanging” slurry wall because it was not intended to key into an aquitard. As discussed within the final DBR, some groundwater will flow under the upland slurry wall, but groundwater modeling predictions (DBR Appendix F; ERRG. 2014) indicate that upgradient flow will mostly be diverted around the upland slurry wall or diverted to the freshwater wetland via the French drain (Section 3.2.14.7) installed on the upgradient side of the upland slurry wall.</p> <p>The nearshore slurry wall, which was installed by a previous contractor in 2016, serves to maximize the travel time of groundwater between areas upgradient of the barrier (i.e., the landfill) and the San Francisco Bay. The nearshore slurry wall will be supplemented by an upgradient well network to support monitoring and, if necessary, leachate extraction.</p>
<p>15. Section 3.2.14, Upland Slurry Wall Installation and Section 4.2, Upland Slurry Wall and French Drain</p> <p>The Phase II RACR concludes that the 220-foot gap in the Upland Slurry Wall results from “a distinct layer of serpentine weathered bedrock encountered approximately 10 feet bgs in the northwestern corner of the Parcel E-2 site.” After completion of a subsurface investigation involving 12 borings and a review of “boring logs from historic documentation within the area,” the Phase II RACR concludes that serpentine weathered bedrock was the “buried obstruction” that impeded upland slurry wall construction.</p> <ol style="list-style-type: none"> <li>Provide the boring logs and other relevant data from the 12-boring step-out investigation of the “buried obstruction,” supporting the conclusion that serpentine weathered bedrock was the buried obstruction that impeded Upland Slurry Wall installation.</li> <li>Provide the boring logs from historic documentation within the area, supporting the conclusion that serpentine weathered bedrock was the buried obstruction that impeded Upland Slurry Wall installation.</li> </ol>	<ol style="list-style-type: none"> <li>Formal boring logs were not prepared as part of the direct-push drill rig investigation described under Section 4.2 of the RACSR. The step-out investigation was only intended to confirm the presence/absence of the (as of that time, unknown) buried obstruction in relation to the proposed upland slurry wall alignment. As described under Section 4.2, no clear path around the subsurface obstruction was observed.</li> <li>Electronic copies of the relevant boring logs from the historic documentation within the area will be provided as part of the Final RACSR submittal, as an attachment to this RTC file (Appendix A).</li> </ol>



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<p>16. Last, please make every effort to address these comments in conspicuous, frontal parts of the report in text, tables, and figures, insofar as possible, rather than in the myriad pages of the appendices.</p>	<p>Comment noted.</p>
<p>17. Due to the 220-foot long by 10-foot deep obstruction, the USW was not constructed as designed. The USW as constructed acts as a gate through which groundwater is funneled to landfill waste, generating leachate that may pollute the San Francisco Bay. Further, a significant amount of groundwater likely will not be diverted to the FW for wildlife habitat. Consequently, it is uncertain whether the remedy will achieve the groundwater and surface water remedial action objectives (RAOs) for the protection of wildlife specified in the Record of Decision (ROD). We do not agree with the Navy's recommendation that "leaves the [USW] as constructed with no further alterations to the target depth," without acceptable evaluation of the effects of the gap. We request the following, to understand the effects of the USW gap on remedy performance:</p> <ul style="list-style-type: none"> <li>a) The November 20, 2017, meeting minutes between the Navy Remedial Project Manager and Design Engineer (ERRG) discussing what was needed for the USW to meet the design objectives.</li> <li>b) The records of the September 2018 investigation of the obstruction (e.g., report, logbook notes, boring logs, photographs, sample analytical data).</li> <li>c) Data-driven evaluation of the USW/French drain system's ability to, in combination with other remedial actions, achieve the groundwater and surface water RAOs for the protection of wildlife.</li> <li>d) Develop and implement a follow-up action if the evaluation or other information demonstrates that the groundwater and surface water RAOs are not being achieved.</li> <li>e) A plan to evaluate the long-term performance of the USW and FW.</li> </ul>	<ul style="list-style-type: none"> <li>a) Meeting minutes between the Navy and their third-party independent Quality Assurance inspector were not collected in preparation of the Parcel E-2 Final RACSR.</li> <li>b) Work activity summaries and photographic documentation have been provided within the Final RACSR as Appendix O and L respectively. Field logbook notes may be provided upon request; however, as previously discussed, neither boring logs nor analytical data was collected. As designed, the Upland slurry wall was not intended to key into an aquitard, nor was there a requirement to identify the top of a bay mud layer. During the Phase II Remedial Action, the Upland slurry wall was installed along the proposed alignment to the deepest depth practical. The supplemental step-out investigation was only intended to confirm the presence/absence of the (as of that time, unknown) buried obstruction in relation to the proposed upland slurry wall alignment. As previously discussed, no alternative alignment to the proposed slurry wall was identified, thus the wall remained along its current alignment.</li> <li>c) Evaluation of the groundwater modeling predictions are presented as part of the DBR (Appendix F; ERRG, 2014).</li> <li>d) Further evaluation of the long-term performance of the upland slurry wall and freshwater wetlands will be conducted in accordance with the RAMP for Parcel E-2 (ERRG, 2014), and in the Five-Year Review, currently scheduled for November 18, 2023. The data collected in accordance with the RAMP and the post-remedial action study work plan will be used to verify that the remedy, as installed, meets the RAOs in the ROD.</li> <li>e) Section 4.2 of the Final RACSR has been revised to include the following statement: "Further evaluation of the long-term performance of the upland slurry wall and freshwater wetlands will be conducted in accordance with the RAMP for Parcel E-2 (ERRG, 2014), and in the Five-Year Review. No further action is required for this RA component; however, the Navy plans to prepare a post-remedial</li> </ul>

**Response to Comments on the Draft [Final] Remedial Action Construction Summary Report, Parcel E-2 Phase II, Hunters Point Naval Shipyard, San Francisco, California, June 2020, DCN: APTM-2005-0013-0047**

*Comments by: Jeff White, San Francisco Bay Regional Water Quality Control Board, comments dated March 6, 2020; follow-up on August 7, 2020*

	<p>action study work plan to evaluate whether the Phase II remedy is operational and functional. This forthcoming work plan will describe the specific tasks needed to conduct ongoing routine performance monitoring, as necessary, to evaluate the performance of the remedy as installed until the full scope of the DBR (ERRG, 2014) has been implemented. Once all phases of the Parcel E-2 RA are completed and requirements of the ROD (Navy, 2012) are met the documentation that the RAOs have been achieved will be presented in the final remedial action completion report for the site.”</p>
<p>18. The full extent of “white crystalline lead oxide particles” and soil contaminated with lead above the hot spot cleanup goal was neither delineated nor removed during construction of the FW where it may intersect the Experimental Ship Shielding Range. Note, description of crystalline lead oxide particles encountered during FW excavation was removed from Appendix X; however, that information remains relevant. Because the hot spot cleanup goal for lead was not attained, lead contamination poses risk to wildlife. The full magnitude and extent of crystalline lead oxide particles and soil contaminated with lead above the hot spot cleanup goal must be addressed.</p>	<p>In continuation of the SFRWQCB comment #10, the full extent of the lead soil excavation to construct the future wetlands was documented under Section 3.2.10.1 of the Final RACSR. Specifically, Figure 8 of the RACSR shows extent of the final excavation footprint along with the bounding confirmation samples collected (Table 6) in accordance with the approved Sampling and Analysis Plan (CB&amp;I, 2016). Once samples meeting the cleanup goal had been established (Figure 8), the excavation area was backfilled to achieve final subgrade elevations with on-site graded soil that had been radiologically screened and cleared for use as fill within Parcel E-2.</p>
<p>19. The RCRA hazardous waste soil pile was not managed in accordance with federal and State of California regulations, potentially resulting in releases of hazardous waste or hazardous waste constituents into the environment. Investigation is needed to determine the nature and extent of any release of hazardous waste or hazardous waste constituents at the RCRA hazardous waste soil pile.</p>	<p>The lead soil piles were excavated, staged, and stored with the intent of utilizing the provisions afforded via the CERCLA/RCRA directive known as the Area of Contamination Policy (AOC) - U.S. EPA, EPA530-F-98-026. The excavation area and the waste staging area were contiguous and as such were part of the entire AOC footprint at HPNS. Under the AOC policy, excavation of soil is not considered a “point of generation” and consolidation of excavated soils is not considered removal from the land. Therefore, the HPNS remediation soils were not subject to the 90-day RCRA storage requirements during the time they were consolidated and were maintained until offsite treatment and disposal was conducted. While staged within the AOC, the lead soil pile was managed on a raised RSY pad which was underlain by a continuous layer of HDPE plastic and approximately 1-foot of compacted soil, all of which was also characterized and removed for off-site disposal at the completion of the project. While staged, the soil pile itself was tarped with plastic sheeting and bermed with straw wattle wrapped in plastic to prevent infiltration</p>

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from run-on. [as evidenced by the attached photographic documentation; Appendix A] All soil stockpiles on site were regularly inspected as part of the required BMP inspections and any deficiencies were noted and repaired as soon as practical. This process was maintained until the remedial waste soils and debris were properly transported, treated, and disposed of at US Ecology located in Beatty, NV.  
The weekly BMP inspection logs are currently stored with the project files and are not typically included as part of the RACSR; however, they may be provided as a separate submittal.

## **Attachment 1**

### **NOREAS Memo**

Provided in response to California Department of Fish and Wildlife Comment No. 4

NOREAS Inc.

## Memorandum

**To:** Nels Johnson – APTIM Corp. (APTIM)  
**From:** Lenny Malo – NOREAS Inc. (NOREAS)  
**CC:** Lincoln Hulse – NOREAS  
**Date:** 4/24/2020  
**Subject:** Shoreline Revetment, Site Grading, Consolidation of Excavated Soil, Sediment & Debris, and Upland Slurry Wall Installation Remedial Action at Parcel E-2 Hunters Point Naval Shipyard San Francisco, California – Biological Resource Activity Completion Memoranda



At the request of APTIM, NOREAS, supported the Shoreline Revetment, Site Grading, Consolidation of Excavated Soil, Sediment & Debris, and Upland Slurry Wall Installation Remedial Action at Parcel E-2 Hunters Point Naval Shipyard San Francisco Project (hereafter referred to as the Project). This memorandum (memo) provides responses to comments that NOREAS received from APTIM on 31 March 2020, on the aforementioned Project's Biological Resource Activity Completion Memorandum; which NOREAS transmitted to APTIM on 9 January 2019.

To that end, NOREAS has attached - Photographs of the American Avocets and thier nests that were observed on 5/31/17 and 6/12/17.



**Photograph 1.**

5/31/17 – First  
Nest Detected

	<p><b>Photograph 2.</b></p> <p>5/31/17 – First Nest Detected</p>
	<p><b>Photograph 3.</b></p> <p>6/12/17 – Second Nest Detected</p>



**Photograph 4.**  
6/12/17 –  
American Avocets  
feigning injury to  
draw attention  
away from the  
away from the  
Second Nest  
Detected

If you have any questions regarding the information described herein, please contact me at your earliest convenience.

Respectfully.

Lenny Malo, MS  
Biological & Natural Resources Services  
16361 Scientific Way, Irvine, CA 92618-4356  
www.noreasinc.com | lenny.malo@noreasinc.com | (714) 458-5695

## **Attachment 2**

### **Historic Boring Documentation**

Provided in response to Regional Water Quality Control Board Comment No. 25

--Core Boring Logs C2 to C6 are believed to represent the approximate location of the Upland Slurry Wall alignment



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SAN FRANCISCO NAVAL SHIPYARD  
SAN FRANCISCO, CALIFORNIA

Advance Planning Report  
for  
**LAND EXCAVATION AND FILL**

PUBLIC WORKS PROGRAM FY 1958

S.S.D.B. PROJECT 12ND-682

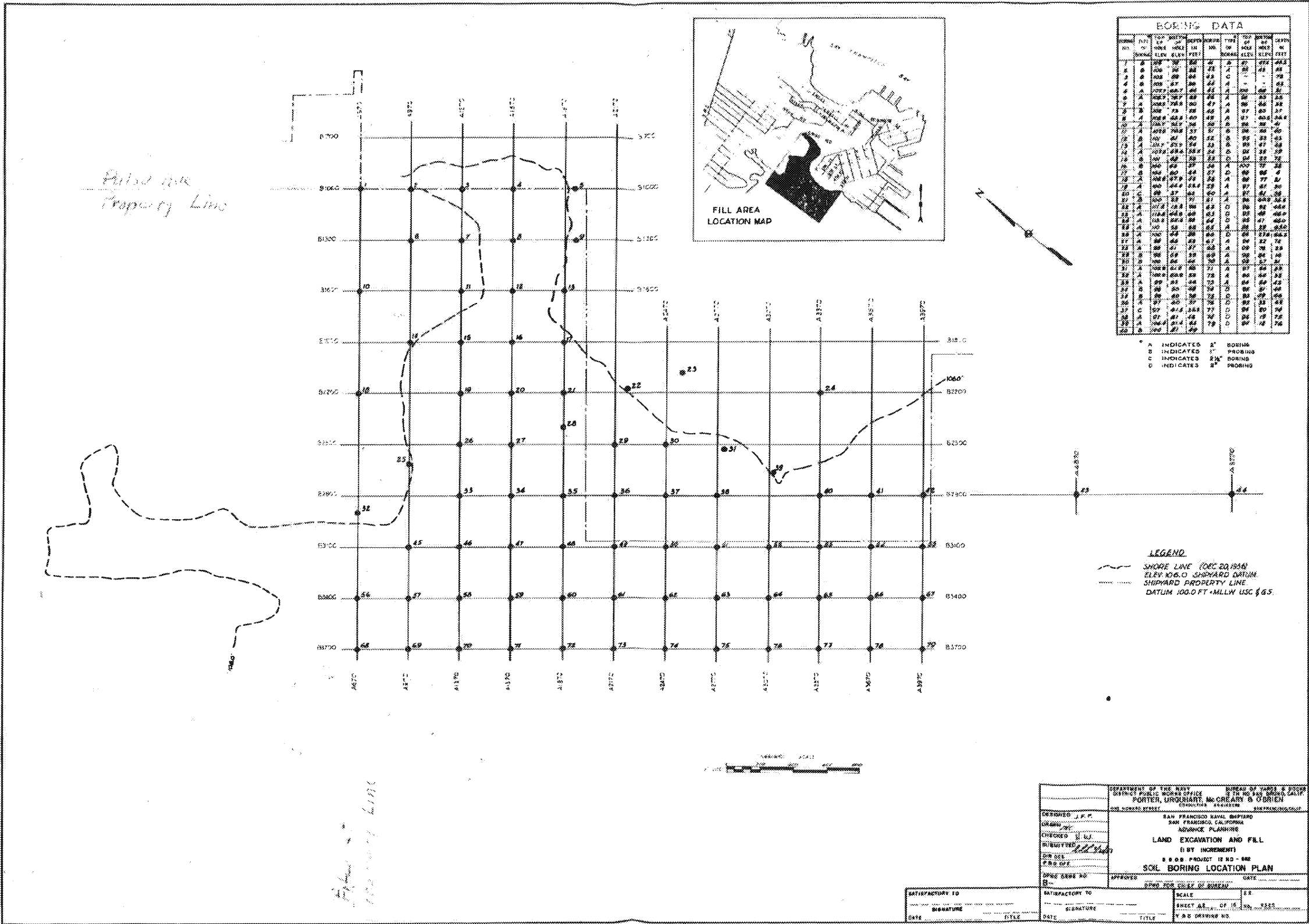
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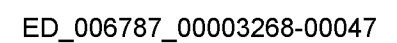
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GREENE & O'BRIEN  
CONSULTING ENGINEERS  
SAN FRANCISCO CALIFORNIA

BUREAU OF YARDS AND DOCKS  
DEPARTMENT OF THE NAVY  
WASHINGTON, D. C.





## **Attachment 3**

### **Photographic Documentation**

Provided in response to California Department of Toxic Substances Control,  
Geological Services Unit Comment No. 7

--Photos taken during well installation showing on-site steam decontamination

Steam Cleaning of Drilling Augers  
Installation of Monitoring and Extraction Wells and Piezometers



Cascade Drilling Performing Steam Cleaning of Drilling Augers during Installation of Upgradient Well Network Parcel E-2. April, 4 2019



Cascade Drilling Performing Steam Cleaning of Drilling Augers during Installation of Upgradient Well Network Parcel E-2. April, 4 2019

Steam Cleaning of Drilling Augers  
Installation of Monitoring and Extraction Wells and Piezometers



Cascade Drilling Performing Steam Cleaning of Drilling Augers during Installation of Upgradient Well Network Parcel E-2. June 2019

## **Attachment 4**

### **Photographic Documentation**

Provided in response to San Francisco Bay Regional Water Quality Control Board  
Comment No. 19

--Project photo decontaminating management of the RCRA hazardous waste soil pile



RCRA hazardous waste soil pile  
Staged within the AOC on a raised RSY pad



RCRA soil pile tarped with plastic sheeting and bermed with straw wattle wrapped in plastic to prevent infiltration from run-on. October, 1 2018



## **Attachment 5**

**Re: U.S. EPA (EPA) Supplemental Comments on Revised Draft Final  
Remedial Action Report (RACR), dated September 2020, Parcel E-2  
Phase II, HPNS**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

December 11, 2020

Ms. Leslie A. Howard  
Remedial Project Manager  
Navy BRAC PMO West  
33000 Nixie Way  
Bldg 50, 2nd Floor  
San Diego, CA 92147

Re: U.S. EPA (EPA) Supplemental Comments on Revised Draft Final Remedial Action Report  
(RACR), dated September 2020, Parcel E-2 Phase II, HPNS

Via electronic mail – hard copy not to follow

Dear Ms. Howard,

U.S. EPA (EPA) appreciates the 11/24/2020 FFA meeting on the Revised Draft Final RACR for Parcel E-2 Phase II (September 2020) during which the Navy clarified that the document is not a remedial action completion report pursuant to CERCLA but a “remedial action construction summary report” (RACSR) documenting a Navy construction milestone. As discussed during the 11/24/2020 meeting, the attached comments supplement EPA’s comments dated 11/23/2020.

Please note that irrespective of the Navy’s construction completion milestone, EPA does not accept at this time that the Phase II remedial action was constructed as designed for purposes of a CERCLA RACR. Namely, the Navy did not construct the upland slurry wall (USW) per the remedial design approved by the Navy and presented to and accepted by the regulatory FFA parties. Please refer to the attached comments on path forward.

Sincerely,

*Karen Ueno*

Karen Ueno  
U.S. EPA Region 9

attachment

cc with attachment:  
Mr. Derek Robinson, Navy BRAC PMO West  
Ms. Brooks Pauly, Navy BRAC PMO West  
Mr. Jeff White, SF Bay RWQCB  
Ms. Nina Bacey, DTSC

12/11/2020

Attachment to U.S. EPA (EPA) Letter of 12/11/2020  
EPA Supplemental Comments  
Revised Draft Final Remedial Action Report (RACR), dated September 2020  
Parcel E-2, Phase II  
HPNS

1. EPA appreciates the 11/24/2020 FFA meeting on the Revised Draft Final RACR for Parcel E-2 Phase II (September 2020) during which the Navy clarified that the document is not a remedial action completion report pursuant to CERCLA but a “remedial action construction summary report” (RACSR) documenting a Navy construction milestone. These comments supplement EPA’s comments dated 11/23/2020.
2. Please note that irrespective of the Navy’s construction completion milestone, EPA does not accept at this time that the Phase II remedial action was constructed as designed for purposes of a CERCLA RACR. Namely, the Navy did not construct the upland slurry wall (USW) per the remedial design approved by the Navy and presented to and accepted by the regulatory FFA parties. Because of the magnitude of the obstruction (over 220’) that prevented the Navy from constructing the slurry wall as designed, the Navy should have performed a technical analysis of the impacts of the obstruction and issued a design modification stamped by a licensed professional(s) under the direction and supervision of the Navy’s qualified Professional Engineer or Certified/Registered Engineering Geologist with expertise in hazardous waste site cleanup, and licensed in the State of California (Section 6 of the FFA). Meeting notes, correspondence, analysis, etc., should have been preserved in the project record. These documents should have been submitted to the regulatory agencies for review/comments per the FFA before proceeding with the construction deviation.

Rather than follow professional standard practice for major design changes discussed above, the Navy proceeded to construct the USW on an apparent ad-hoc basis relying on the resistance of push probes (with no collection of drill cuttings or geotechnical samples), 62-year-old boring logs that according to the Navy “appear to indicate” a distinct layer of serpentine weathered rock in the northwest corner of Parcel E-2, and simplified groundwater modeling from 2014 that did not include the obstruction. There is no revised basis of design or stamped revised drawings. Moreover, it appears that the Navy understood the importance of additional investigations before pursuing design deviation with the regulatory agencies because the Navy stated just that in Section 3.2.14.5 of the Revised Draft Final RACR, “...Navy representatives believed that additional investigation is necessary prior to pursuing deviation to the design with the regulatory agencies.” It is not clear why the Navy did not continue such an approach.

Please also see Comment No. 3, below.

12/11/2020

3. For purposes of a CERCLA RACR, the Navy must now demonstrate that the as-built design of the USW will meet the remedial goals set out in the ROD. The Navy will need to prepare at a minimum a revised basis of design and supporting analysis /calculations all of which are subject to review and comment as primary documents by the regulatory FFA parties. A revised basis of design that supports the as-built structure will need to be developed. The technical analysis of the changes, which likely needs to be based on an updated groundwater flow model, should at a minimum include:
- an updated/overhauled hydrogeologic conceptual site model (including a characterization of the obstruction upgradient and downgradient of the USW and updating the hydrostratigraphic characterization of the natural and landfill soils and materials);
  - the changes in the groundwater flow quantities and paths into and through the landfill;
  - the impacts of the obstruction on the seasonal inflow to the French Drain and ultimately discharge to the wetlands (Note: the discharge from the French Drain, located upgradient, on the northwest side of the USW, is to be a source of freshwater to the manmade wetlands southwest of the USW.)
  - given the changes to groundwater inflow volumes/flow paths through the landfill caused by the obstruction, the Navy needs to consider in consultation with the regulatory FFA parties, collecting leachate samples to assess quantity and quality to inform any “pump and treat” alternative.

The results from this technical analysis will form the new predicted baseline from which the performance of the as-built USW can be monitored. See Comment No. 4, below.

4. After physical construction is complete, and in this case following the Navy’s analysis of the as-built structure discussed in Comment No. 3, above, the Navy must demonstrate that what was constructed is functioning properly and operating as designed to support a CERCLA RACR. The Navy, at a minimum, will need to develop a performance monitoring plan and pursue the timely collection of data and submission of data reports that are subject to agreed upon delivery timeframes, and review and comment as primary documents by the regulatory FFA parties. This is a critical activity because the USW structure was not constructed per the approved and accepted design. To determine if the as-built USW is operational and functional, the new predicted baseline discussed in Comment No. 3, above, must be completed first. Then a monitoring program to evaluate the changes to the groundwater flow patterns upgradient and downgradient of the USW through the landfill mass should be implemented to compare to the predicted changes developed in Comment No. 3. Changes could include groundwater flow quantities/rates upgradient of the USW; flow paths and quantities around the obstruction and beneath the hanging portions of the USW on either side of the obstruction; and seasonal flow into the upgradient French drain.
5. To clarify, EPA is not suggesting that the Navy’s new RACSR document will need to include the activities outlined in Comments No. 3 and 4, above. Rather, per the Navy’s commitment at the 11/24/2020 FFA meeting and in subsequent correspondence, the FFA parties have agreed to a new separate workplan and other deliverables to, at a minimum, accomplish these activities. EPA and the state FFA parties will provide separate comments on the Navy’s draft “Parcel E-2 Roadmap to Site Closure and Transfer” (December 2020). EPA expects that any such workplan will include the activities outlined in Comments No. 3 and 4, above.

12/11/2020

6. Per discussion at the 12/03/2020 BCT meeting, all regulatory FFA parties (i.e., EPA, the Regional Water Quality Control Board (Water Board), and DTSC) share concerns with four issues originally raised by the Water Board, namely: 1) the constructed USW impacts to discharges to the Freshwater Wetlands, 2) soil lead level exceeding the cleanup goal where these wetlands intersect the former Ship Shielding Range; 3) the potential releases of RCRA hazardous waste from the apparently questionably managed hazardous waste soil piles; and 4) missing cradle-to-grave manifests for the transportation and disposal of low level radiological waste and mixed low level radiological waste and RCRA hazardous waste. As we also discussed during the 12/03/2020 BCT meeting, we expect that these four issues will be included in the Navy's new separate workplan referenced in Comment No. 5, above. We appreciate the Navy's 12/08/2020 email from Ms. Brooks Pauly affirming such inclusion.
7. As discussed during our 11/24/2020 FFA meeting and in subsequent conversations with the Navy, EPA expects that the new RACSR document will be clear that it is not a CERCLA RACR. The RACSR should also attach these EPA comments intact (not as a response to comments) so that the record is clear as to EPA's position. All references implying that the document is a RACR should be removed, such as statements or implications that the constructed remedial action is functioning properly and operating as designed, or has achieved or is making progress in achieving remedial action objectives. The certification statement (tied to a RACR) also seems inappropriate. Please review the response to comments (RTCs) stemming from being a RACR not a RACSR, and ensure any RTCs attached to the RACSR are appropriate to the new document and will not confuse the intent of the document.
8. Given that the Navy will provide a new RACSR document and in light of our concerns herein, EPA expects to be given an opportunity to review and comment on the RACSR before it is finalized. Please provide the regulatory FFA parties such an opportunity. Per the FFA, secondary documents like their primary counterparts "shall be the product of consensus to the maximum extent possible" (Section 7 of the FFA). Moreover, secondary documents are also afforded the same review time frames as primary documents.
9. EPA expects that the new workplan referenced in Comment No. 5, will be a primary FFA document, and appreciates the Navy's 12/08/2020 email from Ms. Brooks Pauly affirming that designation. In addition, EPA expects that other deliverables stemming from that workplan also will be primary FFA documents, particularly if they are critical to demonstrating remedial action complete pursuant to CERCLA and EPA guidance. This discussion will commence in earnest after the new year, at which time the regulatory FFA parties will also provide comment on the Navy's draft "Parcel E-2 Roadmap to Site Closure and Transfer" (December 2020). Following discussion and agreement among the FFA parties, the deliverables and schedules stemming from the "roadmap" should be reflected in the Navy's "Document Tracking Matrix."